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ABSTRACT

One of the objectives of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) is to promote standardization in the field of information handling, both in development of guidelines and standards and in the use and application of existing norms and standards. This teaching package on the standardization of information handling processes and procedures is intended for schools of library and information science and as the basis of seminars on the subject. The package consists of the following nine teaching modules and a general introduction: (1) introduction to standardization in information handling; (2) international standardization bodies concerned with information handling; (3) computer hardware; (4) computer software; (5) compatibility in information systems; (6) compatibility in the preparation and presentation of standardized bibliographic records; (7) computer aspects of bibliographic records; (8) standardization in subject analysis; and (9) organizing national standardization in information handling. The introduction includes a list of acronyms, the addresses of the organizations, and a glossary. Overhead transparency masters are included. (Contains 132 references.) (SLD)

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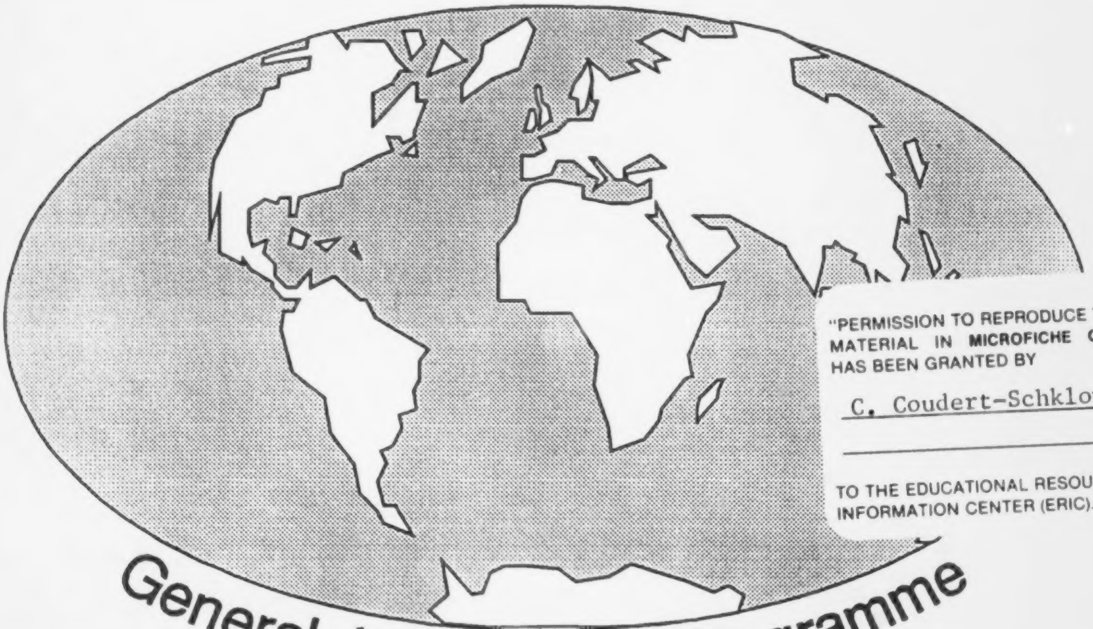
Teaching Package on Standardisation in Information Handling



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Teaching Package
on
Standardisation in Information Handling

Module 0

General Introduction to the Teaching Package
Acronyms - Bibliography - Glossary

General Information Programme

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PREFACE

One of the objectives of Unesco, through its General Information Programme, is to promote standardisation in the field of information handling. On the one hand it is concerned with the development of guidelines and standard-like materials in those area of information handling where international efforts are needed and on the other hand, with the use and application of existing norms and standards.

In the latter area, Unesco has so far concentrated its activities on the dissemination of information on existing standards. This has been done in part through the publication of the *UNISIST Guide to Standards for Information Handling*, and, in co-operation with ISO, the *ISO Standards Handbook on Information Transfer*. It has also organised seminars at national, regional and international levels covering the whole range of information handling standards or some specific topics in this field.

However, the impact of such activities remains rather limited. For users cannot gain the full benefit from publications such as those mentioned above, unless they are already well aware of and familiar with all the problems and aspects of standardisation in information handling. Equally Unesco can only support a very small number of seminars attended by relatively few participants who may or may not be in a position to reflect what they have learned during these seminars in their respective countries or organisations.

Another reason why the impact of Unesco's activities in this area is still limited, is that most of the curricula in institutions of library and information science teaching do not include standardisation of information handling processes and procedures as a specific topic. Some 'standards' may be taught, such as specific bibliographic rules or formats, but without dealing with the rationale behind their use and the need for their compatibility. In other words, the increasingly critical importance of standardisation in the exchange and flow of information is not always emphasised sufficiently.

The project for the development of teaching materials on information handling standards stems from this reality. It is hoped that this package will be used by schools of library and information science and that the subject will be incorporated into their curricula. It may also be used as the basis of seminars organised by national institutions and professional associations.

Preface continued on back...

The concept and strategy of this Teaching Package has been defined by a Consultation Meeting on the Preparation of Teaching Materials on the Use of Information Handling Standards. The Meeting recommended that some fourteen related modules forming a Teaching Package on the subject should be developed.

The preparation of each module was the work of a member of a group of internationally acknowledged experts in the various subjects covered. These included Dorothy Anderson [UK], Erik Vajda [Hungary] and Prof Peter Simmons [Canada]. The modules in the original package were then evaluated by six information science teaching institutions in the Asian Region. Their Report, which found the Package most useful, made a number of recommendations to further increase its usefulness. [1]

These recommendations were then incorporated into the revised present version, undertaken by Dr Anthony Hugh Thompson [UK].

The Teaching Package now consists of nine related modules and a general introduction. They are suitable for use in schools of library and information science as they stand, or they can be adapted to meet local needs. The content of each module has been designed to take into account the knowledge the students will have acquired in their courses and deals specifically with the application of standardisation to information handling.

Equally the modules may be used for general 'sensitising' seminars or in special training sessions on standardisation issues, either used as they stand or adapted appropriately by the instructor.

Any comments or reactions from users of this Teaching Package would be welcome. These, as well as requests for additional copies, should be sent to:-

The Division of the General Information Programme,
Unesco,
7 Place de Fontenoy,
75700 PARIS, France.

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1. *Testing and evaluation of the Unesco Teaching Package on the Application of Information Handling Standards, Final Report.* Manila: Institute of Library Science, University of the Philippines Diliman, 1988.

GENERAL INTRODUCTION TO THE TEACHING PACKAGE

EVEN IF YOU READ NOTHING ELSE in this Introduction, PLEASE READ the METHODS OF USE, NOTES FOR THE INSTRUCTOR and the ORDER OF THE MODULES. There could well be extremely useful material in this Package to help you in your teaching or training!

RATIONALE

The rationale behind the development of this Package is that a knowledge of the importance of standardisation in information handling is critical to the development of skilled information personnel internationally. However, it is recognised that not all the staff of the many teaching and training institutions in information handling will have had the opportunity to gain experience in all the practical or theoretical aspects of standardisation.

Each of the nine inter-related modules in the Teaching Package take the form of a complete lecture which could be given in a library and information science teaching institution or in a seminar or training course. The lecture can be given either as it stands or adapted to meet local needs. To form the structure of the presentation both for the instructor and the students, a set of OVERHEAD TRANSPARENCIES has been designed to be used in conjunction with the lecture notes.

TARGET AUDIENCE

The designated target audience for these modules is undergraduate and postgraduate students in a library and information science teaching institution.

However it is also possible to use the modules with qualified information personnel. This is because each module is designed as a structured presentation, the key points of which are given on the accompanying overhead transparencies. It may be necessary to adapt the teaching notes, or add more information on specific points to precisely meet the needs of such an audience. But generally the same structure and the same overhead transparencies can be used.

Introduction continued on back...

AIM

The aim of this teaching package is to provide comprehensive and structured data on all aspects of standardisation in information handling.

OBJECTIVES

1. To provide this data in the form of a series of modules that can be used as lectures or as the basis of seminars, to meet the needs of the target audience.

2. To present this data in a form that can be used or adapted by library and information science instructors and trainers internationally, whether or not they have been able to gain experience in the field of standardisation.

3. To encourage awareness amongst potential and actual information professionals about the need for standardisation in information handling.

4. To act as a pattern for the production of effective overhead transparencies and the use of efficient teaching techniques.

METHODS OF USE

Each module can be used in a variety of ways, depending upon the level of the participants and the degree of knowledge they already have and need to know, to enable them to perform their work effectively.

As A Lecture.

This can be given in several ways.

1. **As the module stands.**

The notes are written as a SCRIPT to be read aloud to accompany the OVERHEAD TRANSPARENCIES. They MUST BE USED TOGETHER if the lecture is to be given this way. It is essential that Instructors familiarise themselves with the teaching notes beforehand and where possible have checked up on any details that they may not be acquainted with. Any local examples that are called for should also be added. Spaces have been left in the notes and between paragraphs for the insertion of local details and the instructors own additional notes.

Approximate timings for the presentation time are given in the introduction to each module.

Introduction continued...

2. As the basis for a lecture.

The instructor may prefer to use the SCRIPT as a basis for a lecture in their own words, possibly with additional material, depending upon the level of the participants. The content and layout of the OVERHEAD TRANSPARENCIES should not need to be changed, unless unusual local circumstances so dictate. Room has been left in the script for the instructor to add their own notes and examples as required. Each module will have to be re-timed to allow for this approach.

As A Seminar.

Each module may also be used as the basis for a less formal seminar, incorporating demonstrations and the examination by participants of relevant documents. Here the SCRIPT should be treated as a set of notes for each instructor to adapt as they wish, bearing in mind the level of understanding of the participants. Approximate timings for each module given as a Seminar are also given in the Introduction to each module.

As A Short Course Or Training Course.

Here an instructor with the necessary background knowledge may wish to use the structure of some of the modules, as shown on the OVERHEAD TRANSPARENCIES, as the basis for various sessions in the course. They can adapt and add to the SCRIPT as required.

TRANSLATIONS AND ADAPTATIONS

1. Translations.

It is recognised that instructors may wish to translate both the SCRIPT and the OVERHEAD TRANSPARENCIES into another language as necessary. However, it is critical that the same oral presentation style is used in any translations. Any attempt to re-write these notes with longer sentences, as would be normal in a written article or a book, will lead to a lack of comprehension by participants - for there is a distinct difference between the way we TALK to people and the way we WRITE to communicate.

2. Adaptations.

Where an instructor wishes to make changes to either the script or the overhead transparencies, reference first to the *Unesco Guide to the Production and Use of Audiovisual Aids in Library and Information Science Teaching* [2] is strongly recommended to ensure uniformity with the transparencies and notes in this Teaching Package.

[2] *Published in 1983 by the General Information Programme and UNISIST, this guide is available free of charge from UNESCO, 7 Place de Fontenoy, 75700 Paris, France. The reference number is PGI-83/WS/17.*

Introduction continued...

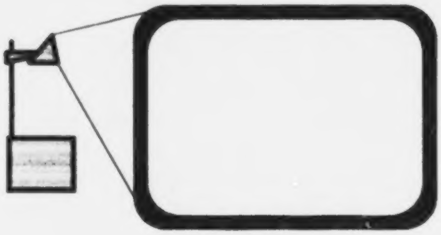
NOTES TO THE INSTRUCTOR

1. Use of the teaching notes and overhead transparencies.

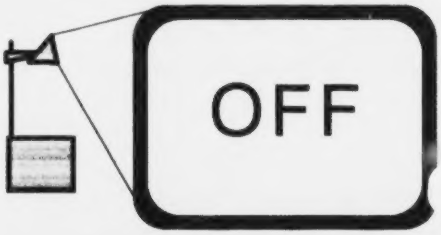
It is important to note that the teaching notes are SPECIFICALLY WRITTEN TO BE SPOKEN ALOUD by the instructor. Short sentences are used, as is normal in everyday speech. To help the instructor, extra punctuation is used to indicate pauses in the sentence. A comma is used to indicate a short pause, while a hyphen is used to indicate a longer pause and/or the beginning of a sub-sentence. It is critical that the same structure is used if the teaching notes are translated into another language.

Text which appears in the script in normal type is part of the lecture and may be read out. Where a sentence appears in **bold black** or *italic* type this is an aid, suggestion or explanation to the instructor. It is not a part of the oral presentation and should not be read out.

The point at which an overhead transparency should be projected is indicated in the notes by the following diagram, which gives the number of the overhead transparency and shows the content of the transparency for the use of the instructor.



When using these modules it is normal practice to switch on the overhead projector with the first overhead transparency already in place, when the diagram for the first transparency is shown in the teaching notes. Following this, the instructor should simply replace it with the next OHT as shown in the teaching notes. It is NOT NECESSARY OR RECOMMENDED that the overhead projector is turned off between overhead transparencies, but only at the end of the session. On rare occasions only does the overhead projector require turning off before the end, and this is indicated by the diagram below.



Each transparency carries a running number showing the module number and the number of the transparency in that module. For example 9-3 is transparency number 3 in Module 9. This number is normally in the bottom right hand corner of the transparency. However, for design reasons this may appear occasionally in the bottom left hand corner or close by.

It is strongly recommended that BEFORE the session, the instructor should arrange the overhead transparencies in order, and especially in semi-tropical and tropical countries should interleave them with a sheet of clean paper.

Also BEFORE the session, the instructor should switch the projector on and load the first transparency onto the projector to check that it is positioned and focussed correctly, then switch the projector off again until the session begins. This will avoid the need for the instructor to turn round to check the image on the screen each time a new transparency is projected, a habit best not acquired!

2. Making the overhead transparencies and handouts.

The full sized paper originals of the overhead transparencies are at the end of each module. The binding of each module allows them to be photocopied easily. Using a standard photocopier, each transparency original should be copied THE SAME SIZE onto an A4 size transparent plastic sheet APPROVED by the photocopier manufacturer or supplier for use in that photocopier. **ON NO ACCOUNT** should ordinary overhead plastic sheets designed for use with overhead transparency pens be used, as this will cause very considerable damage to the photocopier.

Handouts for the use of participants can be reproduced if required by REDUCING the full sized original of the overhead transparency on a photocopier with reduction facilities. The originals can be reduced by a half, or a quarter onto paper copies.

These reductions can then be made into a 'paste up' of 2 or 4 overhead transparencies on a single sheet of paper, and then the paste up can be photocopied to produce the number of copies required for the participants. Although 8 overhead transparencies on a single sheet can be achieved, it is not recommended, as it leaves no room for participants to add their own notes to their copies of the overhead transparencies as the session proceeds. Handout copies of the overhead transparencies should be given out before the session commences so that participants can use them to make notes on, and as an aid for revision or refreshment after the session.

Introduction continued...

If it is necessary to translate the overhead transparencies into another language, they can be handwritten onto overhead transparency plastic sheets, or can be prepared on a computer which can produce the correct **30 point type face.** The Unesco Guideline mentioned in the section TRANSLATIONS AND ADAPTATIONS above should be adhered to. If this is not available, there should be no more than **fifty** words on each transparency, and handwritten lower case letters [such as a, m, o, etc.] should be a minimum of **1/4 of an inch or 6.5 millimetres high**, while letters with ascenders or descenders and capitals [such as p, f, and A, D, etc.] should be **1/2 of an inch or 13 millimetres high.**

ORDER OF THE MODULES, WITH RECOMMENDATIONS AS TO THEIR USE.

While each of the nine modules deals with different aspects of standardisation in information handling, it is not anticipated that they will be used in one continuous sequence, or that each module will be used by the same instructor. Rather, it is hoped that various instructors will use those modules relating to the various subjects they teach, and at an appropriate time in their courses. Equally, trainers may wish to select only those modules that are relevant to the training course they are giving and use them in an order relevant to that course.

Contents

The number and title of each module are given below, with some recommendations as to their use - although instructors are free to use them in any way they wish.

NUMBER	TITLE
0.	General introduction to the Teaching Package.
1.	Introduction to standardisation in information handling.
2.	International standardisation bodies concerned with information handling.
3.	Computer Hardware
4.	Computer Software
5.	Compatibility in information systems
6.	Compatibility in the preparation and presentation of standardised bibliographic records
7.	Computer aspects of bibliographic records
8.	Standardisation in subject analysis
9.	Organising national standardisation in information handling

GENERAL RECOMMENDATIONS AND GROUPINGS

Fuller details and recommendations are given in the introduction at the beginning of each module.

Group 1.

MODULE 1 constructs the educational foundation upon which this Teaching Package is based. As such it should be used as a general lecture at a very early stage in a library and information science course, or as the initial session in a training seminar or course.

MODULE 2 can follow immediately after Module 1, as a second part of the introduction to standardisation.

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Group 2.

MODULES 3 and 4 are important, and unusual in that they can serve two purposes. The first is as preliminary lectures early on in a library and information science course to give students the necessary background knowledge to understand the later modules.

The second role is as the introductory lectures on computers and computer software to all students, or as the introductory lectures in a course on the use of computers in library and information science. The subject of standardisation is dealt with as part of these lectures.

They can also be used as introductory 'refresher' sessions in a training course on computer aspects of library and information science.

In all cases, Module 3 should be followed immediately by Module 4.

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Group 3.

MODULE 5 should be given at an appropriate time after Modules 3 and 4, or to students who have some familiarity with computing. It forms an introduction to the concept of resource sharing, and the remaining modules. It may also be used as an introductory lecture in a training seminar or course dealing with aspects of resource sharing information systems.

MODULE 6 should be used in a course dealing with aspects of bibliographic record production. It may be used as a round up session to the traditional methods and prior to the introduction of computerised methods.

It can also be used with Module 5 in a training course for staff of organisations belonging to or about to join an information system with shared resources.

MODULE 7 is associated with Module 6. It may be used after Module 6 at a point where computerisation is to be introduced.

It may also be used with Modules 5 and 6 in an appropriate training course.

Group 4.

MODULE 8 may be given as the final session of a course covering subject analysis and information retrieval. It introduces the concept of international standardisation in these areas.

It may also be used on a training course on information systems.

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Group 5.

MODULE 9's primary use is with information professionals dealing, or about to deal with the standardisation of information. It attempts to provide them with the minimum required methodological and organisational knowledge on national standardisation. It can be used in training courses on standardisation, after Modules 1 and 2.

However, it can also be used at the end of their courses with undergraduate, postgraduate or advanced students with specific interests in standardisation or management, in a library and information science teaching institution.

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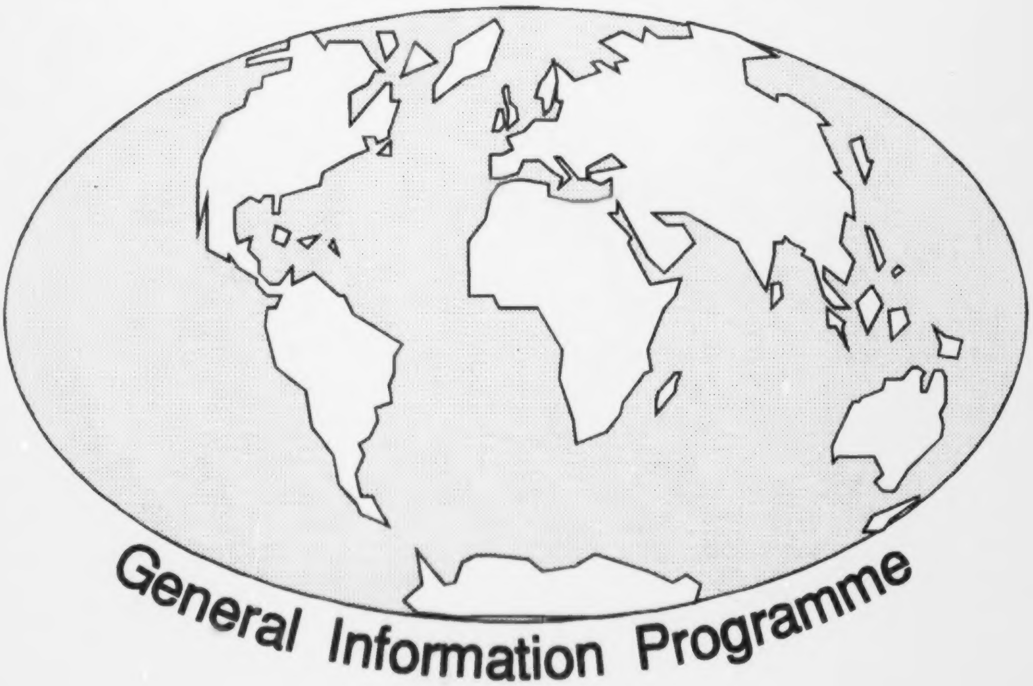
Teaching Package
on
Standardisation in Information Handling

Module 0

Acronyms


General Information Programme

ACRONYMS of Organisations, Information Systems and Programmes included in this Teaching Package. Full titles are given in each Module for all acronyms, unless they are very well known or obvious.

AACR2 - Anglo-American Cataloguing Rules, 2nd. edition.

AGRIS - International Information System for Agricultural Science and Technology. [UN FAO]

ARIS-NET - Arab Information Systems Network.

ASTM - American Society for Testing and Materials.

CDNL - Conference of Directors of National Libraries.

CDS-ISIS - Computerised Documentation System / Integrated Set of Information Systems. [Unesco]

CIP - Cataloguing-in-publication.

EEC - European Economic Community.

EUSIDIC - European Association of Scientific Information Dissemination Centres.

FAO - Food and Agriculture Organization of the United Nations.

FID - International Federation for Information and Documentation.

IAEA - International Atomic Energy Agency.

ICA - International Council on Archives.

ICSU-CODATA - International Council of Scientific Unions, Committee on Data for Science and Technology.

IDIS - International Development Information Services.

IDRC - International Development Research Centre.

IFLA - International Federation of Library Associations and Institutions.

INFOTERM - International Information Centre for Terminology.

INFOTERRA - International Referral System for Sources of Environmental Information. [UNEP]

INIS - International Nuclear Information System.

INPADOC - International Patent Documentation Centre.

IPC - International Patents Classification, maintained by the World Intellectual Property Organisation.

ISBD - International Standard Bibliographic Description.

ISBN - International Standard Book Number.

ISDS - International Serials Data System.

ISIC - The International Standard Industrial Classification. [UN Statistical Office]

ISIS - Integrated Set of Information Systems. [Unesco]

ISO - International Organisation for Standardisation.

ISONET - International Organisation for Standardisation Information Network.

ISSN - International Standard Serial Number.

IUPAC - International Union for Pure and Applied Chemistry.

MARC - Machine Readable Cataloguing.

MINISIS - A mini version of ISIS. [From IDRC]

NFSAIS - National Federation of Science Abstracting and Indexing Services.

OECD - Organisation for Economic Co-operation and Development.

PGI - General Information Programme of Unesco.

PRECIS - Preserved Context Indexing System.

RAMP - Records and Archives Management Programme. [Unesco]

SfB - Samarbetskommitten för Byggnadsfragor.

SRC - Subject-field Reference Code.

TEST - Thesaurus of Engineering and Scientific Terms.

UAP - Universal Availability of Publications. [Unesco/IFLA]

UBC - Universal Bibliographic Control. [IFLA]

UBCIM - Universal Bibliographic Control and International MARC Programme.

UDC - Universal Decimal Classification system.

Unesco - United Nations educational, scientific and cultural organisation.

UNIDO - United Nations Industrial Development Organisation.

UNIMARC - Universal MARC Format. [IFLA]

WIPO - World Intellectual Property Organisation.

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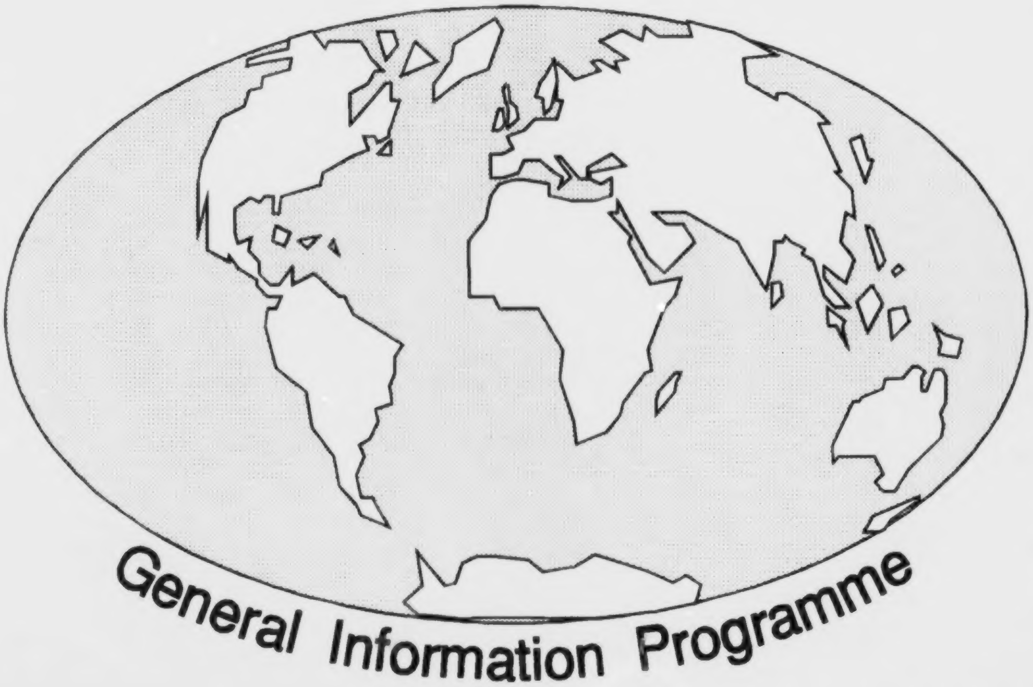
Teaching Package
on
Standardisation in Information Handling

Module 0

Bibliography


General Information Programme

BIBLIOGRAPHY AND ADDRESSES

This BIBLIOGRAPHY consists of THREE parts.

PART 1 is a list in numerical order of documents specifically referred to in the modules. References in the modules are in the form of a number in square brackets.

PART 2 is a list in alphabetical order of additional documents relating to standardisation in information that will be of interest to Instructors.

PART 3 is a list of addresses of some of the major organisations referred to in the modules. References in the modules are in the form of a capital letter in square brackets.

NOTE - all Unesco publications are available free of charge from the Division of the General Information Programme, Unesco, 7 Place de Fontenoy, 75700 Paris, France. Please quote the title and the document code when you request a document.

Major Bibliographies of Unesco General Information Programme Documents

Lermyte, Catherine AND Philippon, Brigitte. Awareness list of the principal documents and publications of the General Information Programme. Paris: Unesco, 1987. (PGI-85/WS/25)

List of documents and publications of the General Information Programme and UNISIST, 1977-1983. Paris: Unesco, 1985. (PGI-85/WS/7). Supplement 1984-1988. (PGI-89/WS/16)

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PART 1

Documents referred to in the Modules

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20. Lancaster, F. Wilfred AND Smith, Linda C. Compatibility issues affecting information systems and services. Paris: Unesco, 1983. (PGI-86/WS/23)

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24. International congress on national bibliographies, Paris, 12-15 September, 1977. Final report. Paris: Unesco, 1977. (PGI-77/UBC/3)

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PART 3. ADDRESSES

A list of addresses of some of the major organisations referred to in the moduless

A. ISO
1 Rue de Varembe,
Case Postale, 56,
CH - 1211 Geneva 20,
Switzerland.

B. Unesco, Division of the General Information Programme,
7 Place de Fontenoy,
75700 Paris,
France.

C. IFLA
Postal address:- PO Box 95312,
2509 CH The Hague,
Netherlands

Visiting address:- The Royal Library,
Prins Willem-Alexanderhof 5,
The Hague,
Netherlands.

D. IFLA UBCIM Office,
c/o Deutsche Bibliothek,
Zeppelinallee 4-8,
6000 Frankfurt am Main 1,
Federal Republic of Germany.

E. FID
Postal address:- PO Box 90402,
2509 LK The Hague,
Netherlands.

Visiting address:- Prins Willem-Alexanderhof 5,
2595 BE The Hague,
Netherlands.

F. ICA

The Secretariat,
60 Rue des Francs-Bourgeois,
75003 Paris, France.

G. ISDS

Centre ISDS,
20 Rue Bachaumont,
F 75002, PARIS,
France.

H. ISBN International Agency,

Staatsbibliothek Preussischer Kulturbesitz,
Potsdamerstrasse 33,
D-1000 Berlin 30,
Federal Republic of Germany.

I. For other addresses, SEE

Yearbook of International Organisations.
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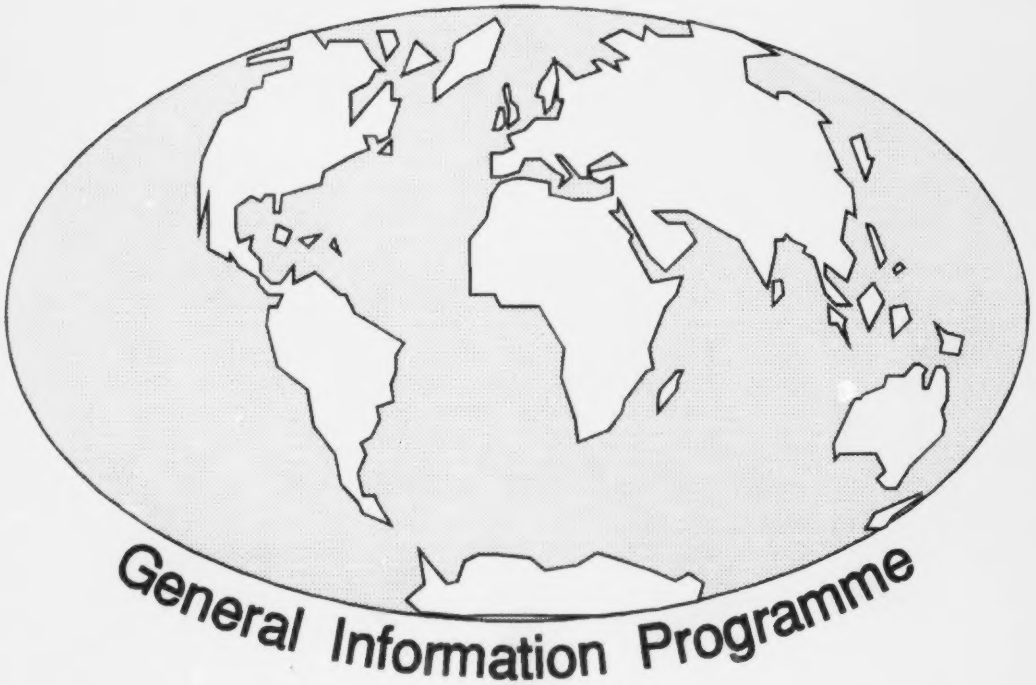
or other directories of international organisations.

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 0

Glossary


General Information Programme

A GLOSSARY OF TERMS –

terminology used in

MODULES 3, 4 and 7

ANALYST A person who defines problems and develops procedures for their solution.

ASCII American Standard Code for Information Exchange. An 8-bit code that uses 7 bits to represent character data such as letters, punctuation, symbols and control characters. The eighth bit can be used for parity.

AUXILIARY STORAGE Data storage other than internal storage; for example storage on magnetic tape or disks. Synonymous with EXTERNAL STORAGE. Contrast with INTERNAL STORAGE.

BACK-UP A copy of important files. One should always make back-up copies of programs, data, and other records. Sensible people store the back-up in another location.

BAR CODE A combination of bars of varying thicknesses, which represent numbers or characters, marked onto an item. These are read by a bar code reader and inputted into a computer.

BAUD RATE The rate at which data is transferred between computers and to peripherals such as printers.

BIT The basic unit of information or data used by computers. When written, a bit is represented by a 1 or a 0, corresponding to a computer switch being on or off. A string of 8 bits makes 1 byte.

BUFFER An area of storage that is temporarily reserved for use in performing an input/output operation, into which data are read or from which data are written.

BUG A mistake or malfunction.

BYTE A string of 8 bits used to represent a single character.

CD-ROM Compact disk read only memory. A single disc can store approximately 730 megabytes of information.

CDS-ISIS Computerised Documentation System / Integrated Set of Information Systems. A major software package for information handling produced by Unesco, suitable for microcomputers.

CHARACTER A piece of data represented by a single byte: a letter, number, mark of punctuation, space, or other symbol.

CHIP A piece of silicon or similar material about the size of a small fingernail, on which are etched thousands of tiny electrical circuits. One chip can hold a million or more transistors.

COMMAND One or more characters (typically, a letter or a word) that instructs a computer program to carry out a specific task.

COMMAND-DRIVEN A term describing a computer program which operates in response to specific commands.

COMMUNICATIONS FORMAT A standardized system of organization for the transmission (as opposed to the processing) of machine-readable data.

COMPATIBLE Two pieces of hardware are compatible if they can work with each other. Thus two computers are compatible when they run the same programs and their disks or tapes are interchangeable. A computer may or may not be compatible with a given printer, disk drive, program, etc.

COMPILER A special program that takes instructions written in a programming language and translates them into the machine language the computer understands.

COMPUTER An extremely fast and complex adding machine.

CONFIGURATION The way in which computer equipment is interconnected and set up to operate as a system.

CPS Characters per second, as in the speed of a printer. Printers can range from 10 cps to several hundred.

CPU The central processing unit, or CPU, is the actual core of the computer - the logic and circuits where data are processed.

DATA A representation of facts, concepts, or instructions in a form suitable for communication and interpretation by humans or machines.

DATABASE A collection of related files which together carry the records of a single project or enterprise.

DATABASE MANAGEMENT SYSTEM An integrated group of computer programs designed to operate, modify, maintain, and produce output from databases.

DATA CONVERSION The conversion of data from human-readable to machine-readable form, typically by keyboard or by mechanical scanning of bar codes, punched paper tape, or optically readable characters.

DATA ELEMENT An autonomous unit of data, made up of a set of characters, pertaining to information of one kind - such as a month of a year, the number of pages in a book, or a place of publication.

DATA FILE A collection of related data records organized in a specific manner. For example, a payroll file (one record for each employee, showing rate of pay, deductions, etc.) or a bibliographic file (one record for each item, showing the title, imprint physical dimensions, standard numbers, etc.

DEBUG To detect, locate, and remove mistakes from a program or data, or malfunction from a computer.

DELIMITER A single character code that shows a computer where a field ends.

DIGITAL PAPER A special form of paper under development on which huge quantities of digitally encoded information can be stored very economically.

DISK A rotating circular plate, usually made of plastic, with a magnetizable surface on which information may be stored. The disc is normally contained in a protective cover. Small plastic disks are officially called 'diskettes.' Most people who use diskettes call them 'disks' or 'floppies' (from 'floppy disk' because they are flexible). Information is stored on disks in the same way it is stored on audio or video tapes. Thus it can be recorded onto and played back from the disc and erased as required.

DISK DRIVE A unit that 'plays' a disk in much the same way a phonograph plays a record.

GLOSSARY OF TERMS

DISKETTE (SEE - DISK)

DISPLAY An output that shows characters as groups of dots on the face of a 'picture tube' or flat screen.

DOS Disk operating system.

DOT MATRIX A printing system in which each letter is formed out of an array, or matrix, of tiny dots, as with letters on display screens.

DOWNTIME The time a computer is out of service, or 'down.' People talk about the 'downtime record' of a computer.

DRAFT QUALITY The quality of printed output of a printer when the fastest printing speed is chosen. In draft quality mode the dots which make up the letters are more pronounced and the type less black - it is used for quick, everyday-printing jobs.

8-BIT PROCESSOR A computer that can 'process' 8 bits, or 1 byte at a time. This is the smallest size in common use, and is about one-fourth as fast as a 16-bit processor.

FIELD In a record, a specified area used for a particular category of data, for example, a book's publisher, an item's serial number, a film's producer. A field may consist of a number of sub-fields.

FILE A collection of specific information stored in a given place in a computer's memory, not unlike a file stored in a filing cabinet. The items in a file are usually called records.

FLOPPY DISK (SEE - DISK)

FORMAT The arrangement of data within a record.

FUNCTION KEY A key on a keyboard, such as the 'control' or the 'F' keys (F1, F2, etc.) that causes the transmission of a signal not associated with a printable character. Reception of the signal usually causes the system to perform some predefined function for the user.

HARD COPY The same as 'printout' - the actual paper that comes out of the printer, as contrasted with words and numbers appearing temporarily on the display screen.

HARD DISK A sealed storage unit with a much higher capacity than floppy disks, often from 20 to 60 megabytes (20 to 60 million bytes).

HARDWARE The actual physical equipment in a computer system: the processor, disk drives, printer, etc. Contrasted with the SOFTWARE.

HEAD A magnetic device that reads, writes, or erases data on a storage medium, such as a disk or tape.

HOST COMPUTER The primary or controlling computer in a multiple computer operation, or network.

INDICATOR A code made up of one or two characters, often numbers, which give supplementary manipulation information to a computer.

INPUT That which is entered into a computer, including data, programs, commands to a program, choices from a menu, etc. "The input consists of monthly sales figures. The computer's output will be annual sales comparisons."

INTERACTIVE A program that, in effect, carries on a conversation with the human at the controls, providing instructions, prompting for responses, and pointing out errors. "Incorrect entry. ISSNs must have 8 digits."

INTERFACE Technically the connection between two parts of a computer system, by cable, plug and socket, or telephone lines. Commonly, any connection between or among elements of a system.

INTERNAL STORAGE The limited amount of storage available within the processor for data and programs in active use. Includes both RAM and ROM.

ISIS Integrated set of Information Systems. A software package on information handling designed by Unesco for use on a mainframe computer. (SEE ALSO CDS-ISIS, MINISIS)

K Short for 'kilo' or 1,000. Technically, in computers only, K represents 1,024 (2 to the 10th power). A computer with '256K' of memory really has 262,144 bytes of memory.

KEYBOARD The standard computer peripheral for inputting information.

KEYWORD One of the significant and informative words in a title, or assigned to a document, that describes the content of that document.

KWIC Keyword In Context. An index that displays keywords in the context in which they appear in the document.

KWOC Keyword Out of Context. An index that displays keywords along with but out of the context in which they appear in the document.

LANGUAGE (SEE - PROGRAMMING LANGUAGE)

LETTER QUALITY The quality of printed output of a printer when the slowest or typewriter quality printing speed is chosen. In letter quality mode the dots which make up the letters are hardly visible and the type is dense black - it is used for printing jobs that require a polished, business like appearance. (SEE ALSO TYPEWRITER QUALITY)

LINE PRINTER An extremely fast printer that can print an entire line at one time.

MAINFRAME A very large computer.

MEGABYTE One million bytes of information. Abbreviated MB or Mbyte, and mostly used to refer to storage capacity of a computer or disk.

MEMORY Synonymous with storage, as in INTERNAL STORAGE and AUXILIARY STORAGE.

MENU A list of choices from which a computer user may select in order to instruct a computer program to carry out a specific task.

MENU-DRIVEN A term describing a computer program which provides a number of choices to the user.

MICROCOMPUTER A small computer. Everyone agrees that a microcomputer is smaller than a minicomputer, but no one agrees where to draw the line between them.

MICROPROCESSOR A single chip containing all the processing circuitry of a computer. Microprocessors appear in things ranging from watches and cars to stereos.

MINICOMPUTER Bigger than a microcomputer and smaller than a mainframe. One common distinction is that minicomputers do not require their own air conditioned rooms (even if they might benefit from them) while mainframes do.

MINISIS A mini form of ISIS - a software package for information handling, produced by the International Development Research Council for use on a minicomputer. (SEE ALSO CDS-ISIS, ISIS)

MODEM A device that translates the output of a computer into sounds that can be sent over telephone lines.

MOUSE A computer peripheral used primarily to control the movement of the cursor on the screen of a visual display unit.

MULTI-USER SYSTEM A computer system in which the same computer has two or more work stations (terminals) permitting two or more people to do different things at the same time.

NETWORK A complex consisting of two or more interconnected computers.

ONLINE A situation in which a device or information system is under the direct control of the computer. As a simple example, most airline computers keep schedule information 'online' so the reservation clerk won't have to keep you waiting while they load a special program for your particular flight.

OPERATING SYSTEM A special internal program that manages or controls the entire computer system. Two identical-appearing computers with different operating systems may not be compatible.

OPTICAL CHARACTER RECOGNITION A form of input. The machine identification of printed characters through the use of lightsensitive devices. Abbreviated OCR.

OPTICAL DISC A video disc / storage device with a spiral groove at the bottom of which are minute depressions or pits which are read by a laser beam. In addition to existing playback only discs, there are recordable and recordable/erasable discs under development. Such a disc can store approximately 2 million megabytes of information.

OUTPUT That which comes out of a computer, generally to a printer, a display screen, or an auxiliary storage device.

PERIPHERAL DEVICE Every piece of hardware other than the computer itself is considered a peripheral device: printers, disk drives, bar code readers, terminals, etc.

PRINTER The device which produces computer output in written form on paper.

PRINTOUT That which the printer produces is called a printout, or hardcopy.

PROGRAM A series of instructions or statements, in a form acceptable to a computer, prepared in order to achieve a certain result.

PROGRAMMING LANGUAGE A select vocabulary with associated syntactical rules, that is used to create a computer program. Normally, only the programmer uses the language; the end user of the program uses a menu and/or commands.

PROMPT A symbol supplied to the user by an online program to indicate that a response is required in order to continue processing.

PUNCHED PAPER TAPE A paper tape on which information is stored in the form of partially or completely punched holes.

RAM Random Access Memory: the temporary memory of a computer. Programs are loaded (transferred) from permanent disk or tape storage into RAM to be used. Input (anything entered into the computer) also goes first into RAM. RAM is usually erased when the computer is turned off. 'Random access' means the computer can go directly tc any part of it, rather like turning directly to one page of a book instead of having to run the tape cassette to the selection you want.

RECORD A collection of related items of data, stored together in a file. One item of data may constitute a sub-field or field; a complete set of fields may form a record; a number of records form a file.

RESPONSE TIME The time between the submission of an item of work to a computing system and the return of the results.

ROM Read Only Memory. Non-erasable memory built into the computer to perform various internal operations and diagnostics, and to provide standard functions for use by application programs.

16-BIT PROCESSOR A computer that can process 16 bits, or 2 bytes, at one time.

SOFTWARE Either a file of data, or a program that can be run on a computer, telling the computer what to do.

STAND ALONE A computer or system that can operate by itself, rather than needing to be connected to another computer somewhere else.

STRING A set of consecutive, adjacent items of similar type.

TAG One or more characters attached to an item of data (typically a field) for the purposes of identification.

TAPE DRIVE A device that moves tape past a head. (SEE - HEAD)

TERMINAL A work station, typically consisting of a keyboard and display screen, which performs input and output when connected to a computer.

THIRTY-TWO BIT PROCESSOR A computer whose central processing unit can handle information or data in chunks of 32 bits.

TIME SHARING Two or more people using the same multi-user computer at the same time. The terminal may be in one location and computer in another.

TRANSISTOR A solid-state switch capable of existing in two states, such as on and off, or positive and negative. These states are usually represented as bits.

TURNKEY SYSTEM A computer system chosen, programmed, and tested by a computer dealer, store, or service agency, and then turned over to the customer or end user ready to use.

TYPEWRITER QUALITY A printer whose output, or printouts, look as if they were typed on a typewriter. The only quality available on a daisy-wheel printer. (SEE ALSO - LETTER QUALITY.)

VISUAL DISPLAY UNIT (VDU) A television monitor upon which the output of the computer can be visually displayed.

WINCHESTER DISK A hard disk of high capacity (often 20 to 60 megabytes), hermetically sealed for reliability. Because it is small and fast, it is often used with small computers requiring large memory capacity. (SEE ALSO - HARD DISC).

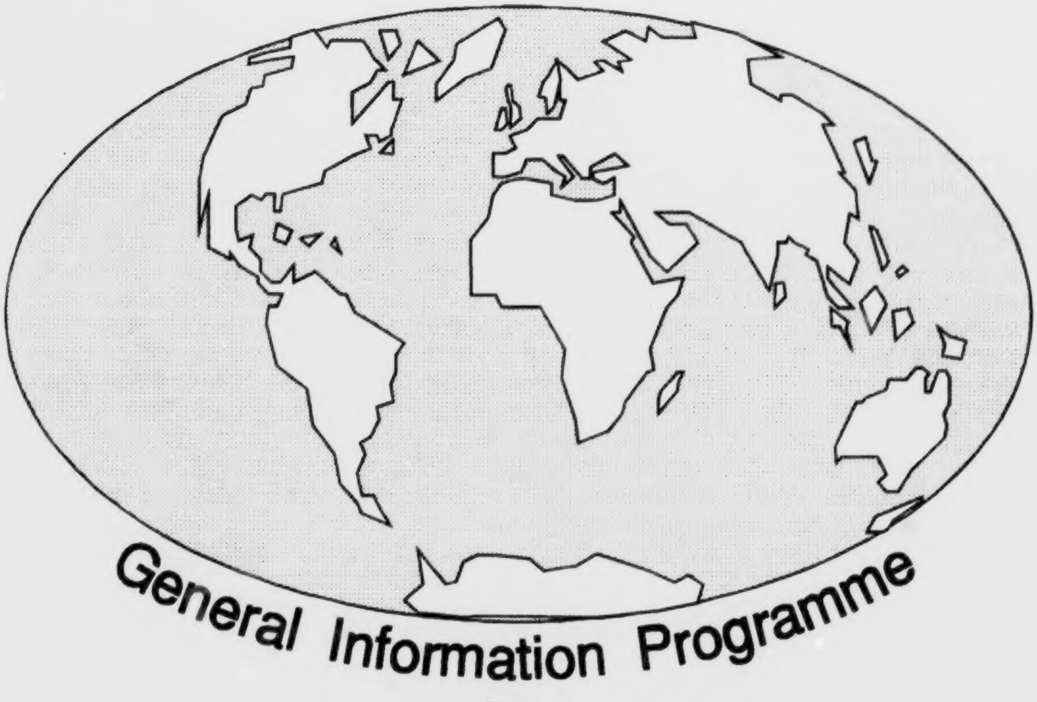
WSIWYG 'What you see is what you get'. A term used to describe a computer program (often a word processing, desk top publishing or graphics program) where the image displayed on the VDU shows precisely what the printer should be able to reproduce.

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 1

Introduction to standardisation in information handling


General Information Programme

INSTRUCTORS

PLEASE read **Module 0 - General Introduction to the Teaching Package,** before using this Module. It contains recommendations on how to use the Programme most effectively.

MODULE 0 also contains:

* A list of **ACRONYMS** giving the full titles of organisations referred to in this Teaching Package.

* A **BIBLIOGRAPHY** of documents referred to. These are followed by a [number] in the Module - full details are given in numerical order in the Bibliography.

* **ADDRESSES** of some major organisations denoted by a [letter] in the Module, are listed at the end of the BIBLIOGRAPHY.

* A **GLOSSARY** of computing terminology.

INTRODUCTION TO MODULE 1

Module 1 constructs the educational foundation upon which this teaching package is based. As such it should always be used unless students are already thoroughly familiar with the necessity for standardisation in information handling.

It consists of 6 sections. Each section deals with one of the objectives listed below.

TIMING

AS A LECTURE

If these teaching notes and overhead transparencies are used as they stand, the lecture should take 40 - 45 minutes. If additional local examples and other material are added as suggested, and a discussion session is held at the end of the session, it could take 50 - 60 minutes.

AS A SEMINAR

The teaching notes and overhead transparencies form the basis of a seminar lasting approximately one hour or longer.

AIM

To convince participants of the necessity for standardisation in information handling.

Introduction continued on back...

OBJECTIVES

To show:-

1. why international and national standards are required
2. the status of standards
3. the concept of international standardisation
4. the types of regulations that already exist
5. how standards are made
6. areas in information handling where standardisation needs to be applied.

BACKGROUND READING

Instructors may wish to consult Walt Crawford's book ***'Technical standards: an introduction for libraries'*** and Henriette Avram's article ***'Organisations contributing to the development of library standards'*** for further information. [1, 2]

IT IS RECOMMENDED THAT:

IN SEMINARS AND SHORT COURSES Instructors should give a copy of the Bibliography in Module 0 to all participants. The Bibliography can have further items added to it as appropriate and be updated as new standards are published.

IN LECTURES IN A LIBRARY AND INFORMATION SCIENCE SCHOOL, participants should be made aware of where they can obtain a copy of the Bibliography for further study.

METHODS OF PRESENTATION

The Teaching Notes which follow can be used in two ways. EITHER the Instructor can read them aloud, whilst projecting the accompanying OVERHEAD TRANSPARENCIES. OR the Notes can form the basis of the Instructor's own presentation to which additional materials and overhead transparencies can be added where appropriate.

Type in **Bold** or *Italic* is for the information of the Instructor only and should not be read aloud.

TEACHING NOTES

OHT 1-1

STANDARDISATION IN
INFORMATION HANDLING

Subject outline

- what are standards ?
- why have standards ?
- why international standards ?
- what regulations exist ?
- how are standards made ?
- which areas of information handling require standardisation ?

1-1

The aim of this module is to show the need for standardisation in the handling of information. To do this it is necessary to answer the questions shown on the overhead transparency.

We will begin by answering the first question briefly, although we will examine it in greater detail in a few minutes.

What are standards? Standards are norms. A ‘norm’ is a criterion, a standard, a model, or a measure, pattern or type.

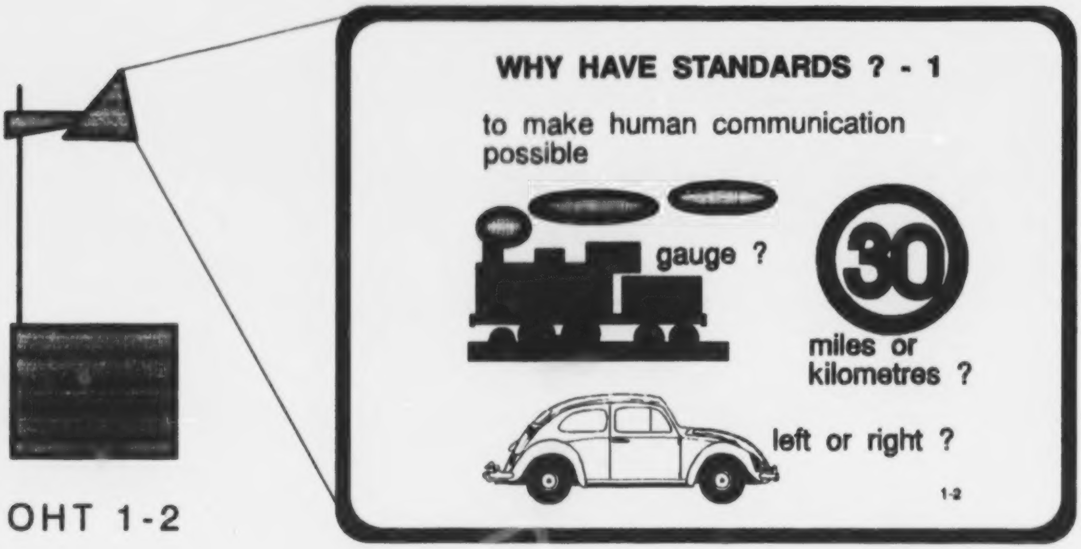
The scientific definition of a ‘standard’ is ‘an accepted reference sample used for establishing a unit for the measurement of a physical quantity’.

OHT 1-1 continued on back...

OHT 1-1 continued

Having established what a standard is, we will go to look at the need for standards both nationally and internationally - what types of regulations already exist - how standards are made - and then see where standards can be applied to information work.

OBJECTIVE 1. WHY INTERNATIONAL AND NATIONAL STANDARDS ARE REQUIRED



WHY HAVE STANDARDS ? - 1

to make human communication possible

gauge ?

miles or kilometres ?

left or right ?

OHT 1-2

Why do we have standards?

Firstly, because they make effective human communication possible. There are many examples of human communication which create problems both of understanding and of technology. Several examples are shown on the overhead transparency.

Trains - consider the problems of different railway gauges, sometimes in the same country.

For example until 1962, Australia had three different railway gauges - that is the distance between the two running rails. This made interstate travel on the same train impossible.

The "PARIS - MILAN TALGO" express train has to have the wheels of its carriages adjusted from French to Spanish gauge and back again each time it crosses the frontier.

OHT 1-2 continued on back...

OHT 1-2 continued

In different countries, cars drive either on the left or right side of the road.

For example cars in Malaysia drive on the left hand side of the road. Cars in Canada drive on the right hand side.

Driving on different sides of the road can be found even in neighbouring countries.

In the two neighbouring countries, France and the United Kingdom, cars drive on the opposite side of the road.

Signs - there are different meanings of signs and terms, and different units of measurement. These create problems in scientific communication.

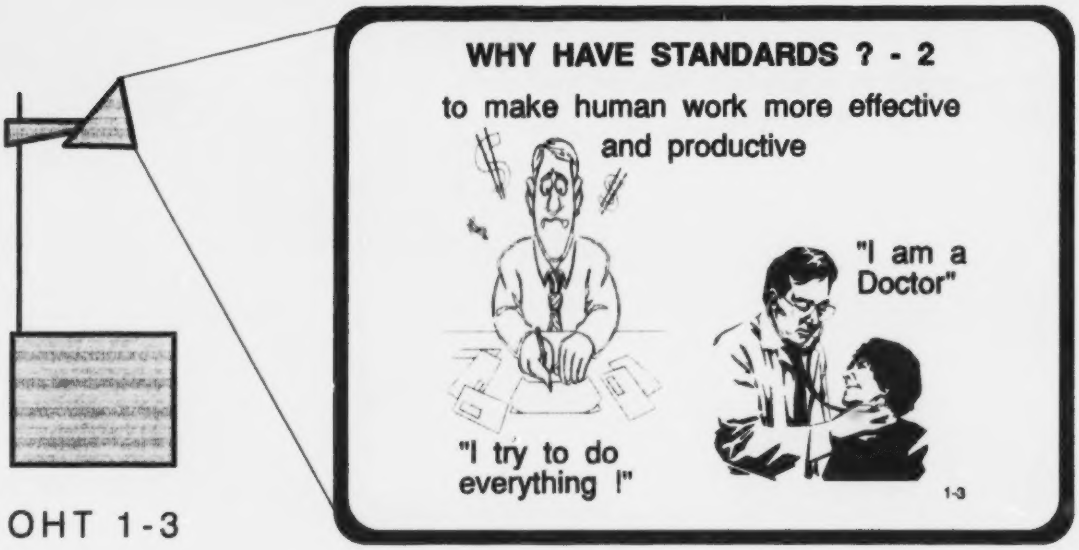
For example, 1 billion (UK) = 1 million million
while 1 billion (USA) = 1 thousand million.

1 kilometre = 0.621371 miles.

100 degrees Centigrade (boiling point) = 212 degrees Fahrenheit.

NOTES. Participants can suggest other examples of communication problems.

Most of these problems could be solved by applying standardisation - at national or international levels. It has happened. For example, after years of driving on opposite sides of the road, Sweden and Denmark decided to drive on the same side to make travelling between their countries easier.



OHT 1-3

WHY HAVE STANDARDS ? - 2

to make human work more effective and productive

"I try to do everything !"

"I am a Doctor"

1-3

Secondly, standards enable human work to be more effective and productive.

Work is becoming more complex as people want more than just the basics of life. The people who say "I try to do everything" are less likely to succeed.

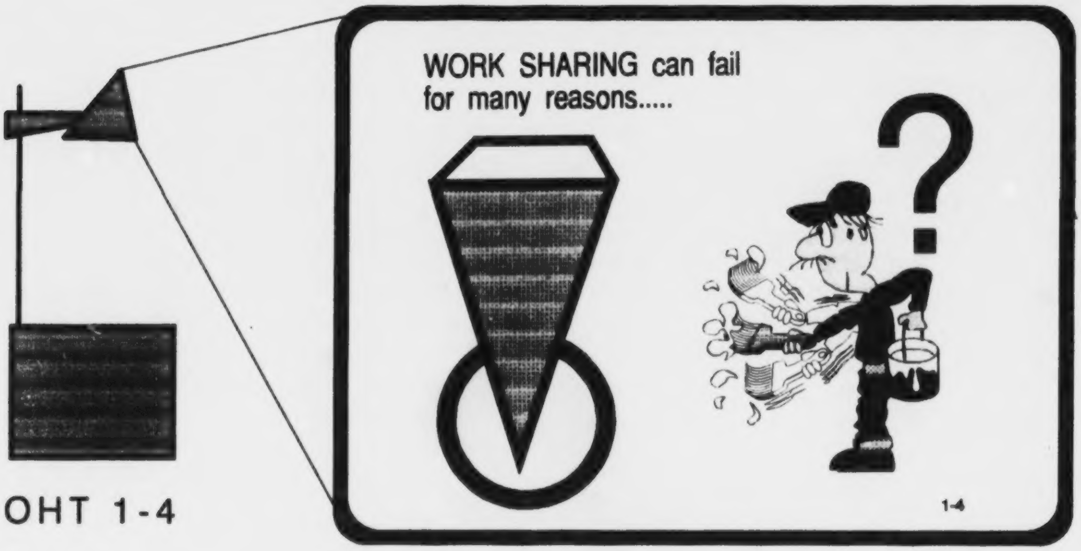
Increasingly people have to specialise and learn to share the workload with each other. This we will call WORK SHARING. For example, doctors share the work load of a hospital with other specialists, such as nurses, administrators and technicians.

Other examples of specialists include manufacturers, shopkeepers, agricultural workers, and information workers. Within each of these areas further specialisation may be necessary.

OHT 1-3 continued on back...

OHT 1-3 continued.

Specialisation means that people concentrate on acquiring knowledge in one particular area. This may lead to increased skills and improvements in working practices.



OHT 1-4

WORK SHARING can be hindered or may fail.

Firstly, for technical reasons, as the picture of a square peg in a round hole suggests.

For example, the people involved in the video industry may use different sizes of components. This means that a Betamax video cassette will not play in a VHS videocassette recorder.

Or there might be different methods of construction. An American VHS videocassette will not play on a French VHS videocassette recorder as the American NTSC video signal is constructed in a different way to the French SECAM signal.

Or there may be different power requirements. An American VHS videocassette recorder will not work in France because each country has a different type of electricity supply.

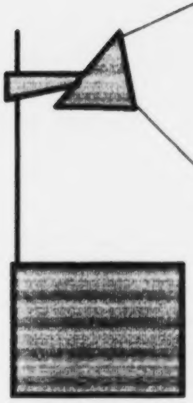
OHT 1-4 continued on back

OHT 1-4 continued

Secondly, worksharing can fail for human reasons.

The people involved may have different areas and levels of knowledge and experience and may not understand each other. For example, the Doctor and Nurse both care for sick people. Each has their own responsibilities, but there must be an agreement of practice and language - and a level of understanding to enable them to work together effectively.

They may have no time or opportunity to find the best methods of working. They may be so busy in their everyday work that there is no time for education, training and research.



OHT 1-5

WORKSHARING PROBLEMS CAN BE SOLVED BY:-

- Agreeing to the STANDARDISATION of sizes, methods and systems, and terminology.

THIS RESULTS IN:

- transfer of knowledge
- uniformity of practice
- supplementing experience
- guidelines for practice and training.

1-5

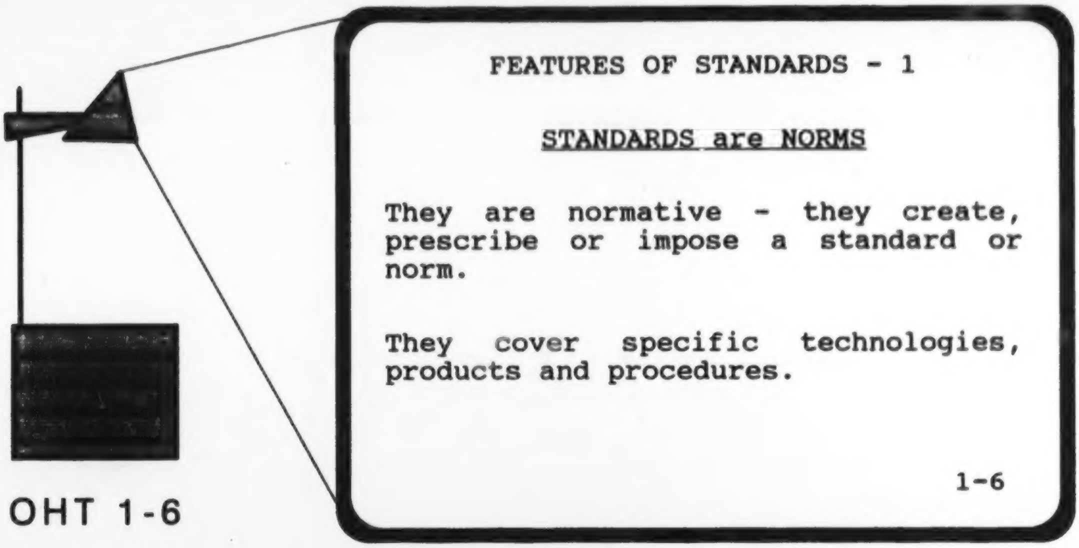
Problems of WORK SHARING can be solved by mutual agreement. This involves individuals, companies and organisations agreeing to STANDARDISATION.

For example, standardisation is needed for the sizes of components - systems of operation - methods and practices - and language and terminology.

The application of these STANDARDS:

- permits the transfer of knowledge
- ensures uniformity of practice
- supplements experience with unambiguous rules
- gives guidelines for practice and training.

OBJECTIVE 2. THE STATUS OF STANDARDS



FEATURES OF STANDARDS - 1

STANDARDS are NORMS

They are normative - they create, prescribe or impose a standard or norm.

They cover specific technologies, products and procedures.

1-6

OHT 1-6

Standards are normative. The term 'normative' can be defined as:

- relating or dealing with norms (that is, standards),
- explaining, developing, establishing, discovering or setting up a norm,
- creating, prescribing or imposing a norm.

The term can also be defined as:

- regulative, prescriptive.

Standards are normative documents because they have a binding force either by law, contract, or convention. They are rational and may be used as guidelines in training.

Standards cover specific technologies, products, and procedures.

OHT 1-6 continued on back...

OHT 1-6 continued.

In the area of technologies and tools they apply, for example, to packaging and containers, steel manufacture, and magnetic tapes.

***NOTE** Significant local examples can be given here in addition or in place of the above.*

For products, they apply to objects such as apples, screws, and electric plugs.

***NOTE** Local examples can be given as appropriate.*

Procedures are covered, such as identification, registration, and safety.

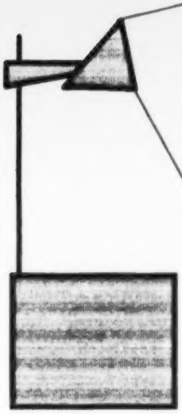
In the field of information handling, standards take a variety of forms. They can be guidelines or models against which services and facilities can be compared. Standards for Library Services belong to this form.

Other information standards are rules that should be applied consistently to tasks such as cataloguing and indexing. However, by their very nature, it is not always possible for different organisations to produce exactly the same results.

Another form is that of the 'technical standard'. These need to be strictly applied by all organisations engaged in some form of resource sharing. Technical standards cover items such as character sets and format structures used in the production of computerised bibliographic records. [1]

Thus Standards specify prior conditions that should be fulfilled. Standards have been developed whenever repetitive operations have become organised procedures.

It is not only Standards that are normative documents. National and international legislation is normative, as are many social conventions.



OHT 1-7

FEATURES OF STANDARDS - 2

STANDARDS also:

cover specific geographic areas

are prepared by approved bodies
- Standards bodies
- Standardising bodies

1-7

Standards cover specific geographical areas. They may cover:

The whole world (these are world-wide international standards)

A group of countries (called regional international standards)

A single country (called national standards)

A group of institutions within a country (called branch or regional national standards)

A single institution (called in-house standards).

The preparation of standards is undertaken by various approved bodies.

These include STANDARDS organisations or bodies, which are institutes, associations or other public or private bodies where the preparation of standards IS THEIR MAIN ACTIVITY. They are appointed by election, law or mutual agreement, to approve and issue standards. [2]

OHT 1-7 continued on back....

OHT 1-7 continued.

National standards organisations cover one country. For example:-

> ***The British Standards Institution, (BSI).***
> ***Or give your own national standards organisation***

> ....

NOTE - National Standards Bodies, or Member Bodies, are listed in the ISO Catalogue. [3]

ISO, the International Standards Organisation, covers all countries. [3] [A]

Other forms of approved bodies are the STANDARDISING organisations. These are research and development, training, or management organisations, etc., which deal with the preparation of standards IN ADDITION TO THEIR MAIN ACTIVITIES. [2]

Any such organisation CAN BE a Standardising Body. They may approve and issue normative documents which are called STANDARD-LIKE DOCUMENTS to distinguish them from STANDARDS issued by Standards Organisations.

They co-operate and co-ordinate with authorised STANDARDS BODIES.

OHT 1-8

FEATURES OF STANDARDS - 3

STANDARDS

are also based on an agreement of best practice

and need regular updating

1-8

Standards are based on an agreement of best practice.

That is, Standards Organisations - co-operating with Standardising Bodies and other organisations in that particular field - will prepare standards that represent what is considered to be the best practice at that time.

Inevitably, when the geographical coverage of a standard is wide, the rules it contains are general. This is because it is easier to achieve a consensus on special problems in a relatively limited area.

Countries may adapt international standards to meet their special needs without infringing the agreement achieved at international levels.

OHT 1-8 continued on back...

OHT 1-8 continued.

Standards also need regular updating.

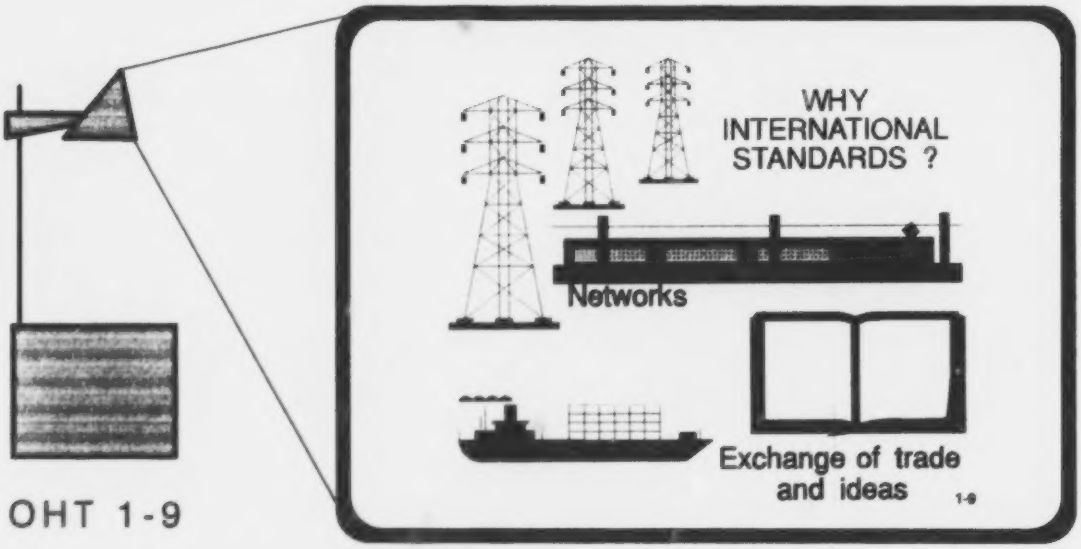
However, because of the time it takes to approve and publish Standards, they often lag behind current best practice. This is because new developments have taken place in the technology since the standard was drafted.

This is also a problem facing legislators. For example, when creating laws concerning copyright, you find that developments in print, audio, video and computer technologies are taking place so quickly that any law is obsolete before publication.

It is also a problem in the field of information. Standards that influence everyday practice - for example, standards for library cataloguing rules, classification systems, bibliographic records, and so on - may quickly become out of date as new technology and methods are introduced.

Therefore standards have to be periodically reviewed and modified where necessary.

OBJECTIVE 3. THE CONCEPT OF INTERNATIONAL STANDARDISATION



OHT 1-9

Why have international standards?

Point to the pictures of railways and power supply on the overhead transparency.

Consider the increasing internationalism of these industries, with railways systems covering a continent, and the supply of electricity from one country to another. Both railway systems and power supply systems are NETWORKS.

Point to the pictures of a ship and a book.

The ship is engaged in carrying goods for international EXCHANGE. The book and other forms of live and recorded information permit an EXCHANGE of ideas internationally.

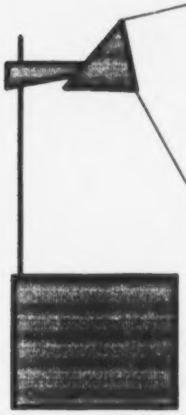
OHT 1-9 continued on back...

OHT 1-9 continued

International networking and exchange would be impossible if products, tools, technologies and procedures were based on contradictory national standards. This would also apply within a country if local standards contradicted each other.

The ideal is standardisation on an international scale to achieve international compatibility.

Why then are national standards still necessary?



OHT 1-10

WHY HAVE NATIONAL STANDARDS ?

- to enable international standards to be applied
- to standardise language and terms
- to standardise details where international agreement is not possible or necessary

1-10

Why have national standards? To enable international standards to be applied.

International standardisation is achieved when the main points of NATIONAL standards are based on INTERNATIONAL standards.

INTERNATIONAL standards should be implemented through compatible NATIONAL Standards.

As a consequence, national standards deviating from existing INTERNATIONAL standards should not be prepared. Equally the preparation of international standards should always take into account existing NATIONAL standards.

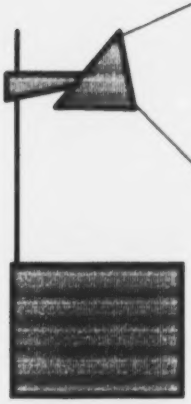
OHT 1-10 continued on back...

OHT 1-10 continued.

To standardise language and terms. National standards translate terms, measurements, and so on used in international standards into approved national and local usage.

To standardise details where international agreement is not possible or necessary. While remaining within the spirit of the international standard, the national standard adapts and supplements it to meet local needs and practices. Such decisions may be influenced by culture, social conventions and other factors.

OBJECTIVE 4. THE TYPES OF REGULATIONS THAT ALREADY EXIST



OHT 1-11

WHAT REGULATIONS EXIST ?

STANDARDS

- draft and approved

STANDARD-LIKE DOCUMENTS

- recommendations
- rules
- guidelines
- codes of practice
- instructions
- technical reports
- handbooks, manuals

1-11

What type of regulations exist?

Standards. Approved STANDARDS, issued by Standards Bodies, are usually MANDATORY.

Standard-like documents. Amongst the standard-like documents are RECOMMENDATIONS, which are issued by Standards Bodies for approval and may become Standards. RULES, for example, for games like football, may be nationally and internationally accepted.

GUIDELINES, such as those issued by Unesco, and other standard-like documents are usually to be considered as RECOMMENDATIONS. They are normally meant for a limited group of users.

If necessary, give local examples of the other standard-like documents.

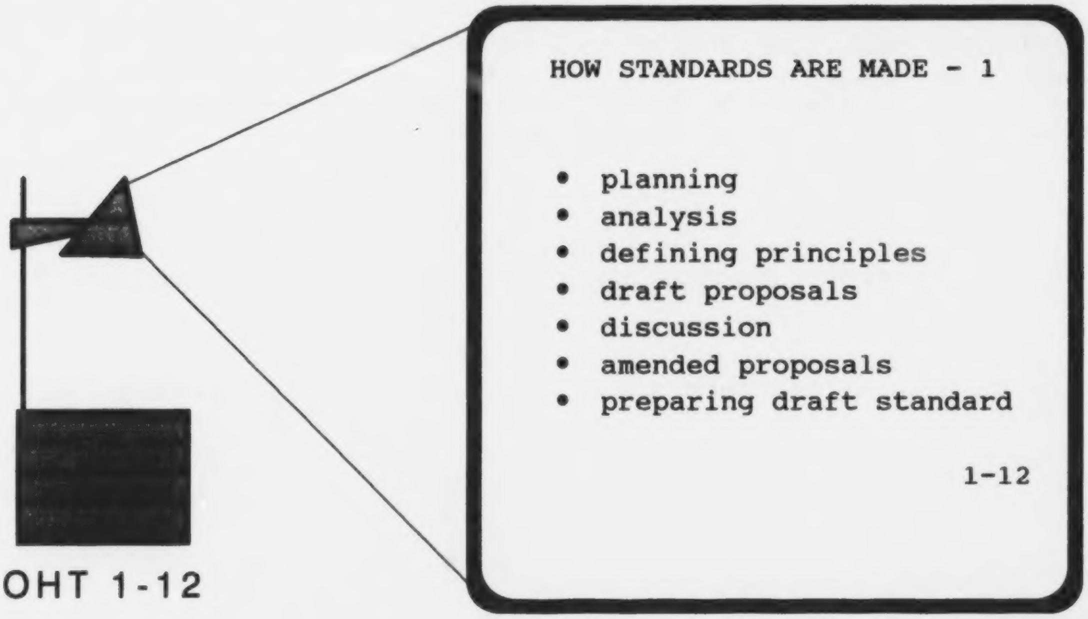
OHT 1-11 continued over...

OHT 1-11 continued.

There is no clear cut distinction between the various types of Regulations. The names or designations of some normative documents are often confusing or inconsistent. Is there a further case for standardisation here?

Should not all the terminology used in information transfer be standardised? [4]

OBJECTIVE 5. HOW STANDARDS ARE MADE



OHT 1-12

HOW STANDARDS ARE MADE - 1

- planning
- analysis
- defining principles
- draft proposals
- discussion
- amended proposals
- preparing draft standard

1-12

How are standards made? Regardless of whatever type of body is creating the Standard, the developmental process shown on the overhead transparency will normally be followed.

NOTE - see also Handouts 1 and 2 in Module 2.

PLANNING will normally be carried out by specialists in the process or technology in question. They will work with a steering, co-ordinating or controlling committee made up of the specialists themselves, plus representatives of both the Standardising and the Standards Body.

ANALYSIS will be carried out by the specialists.

The DEFINING OF PRINCIPLES will be the responsibility of the Committee.

DRAFT PROPOSALS will be drafted by one or several specialists.

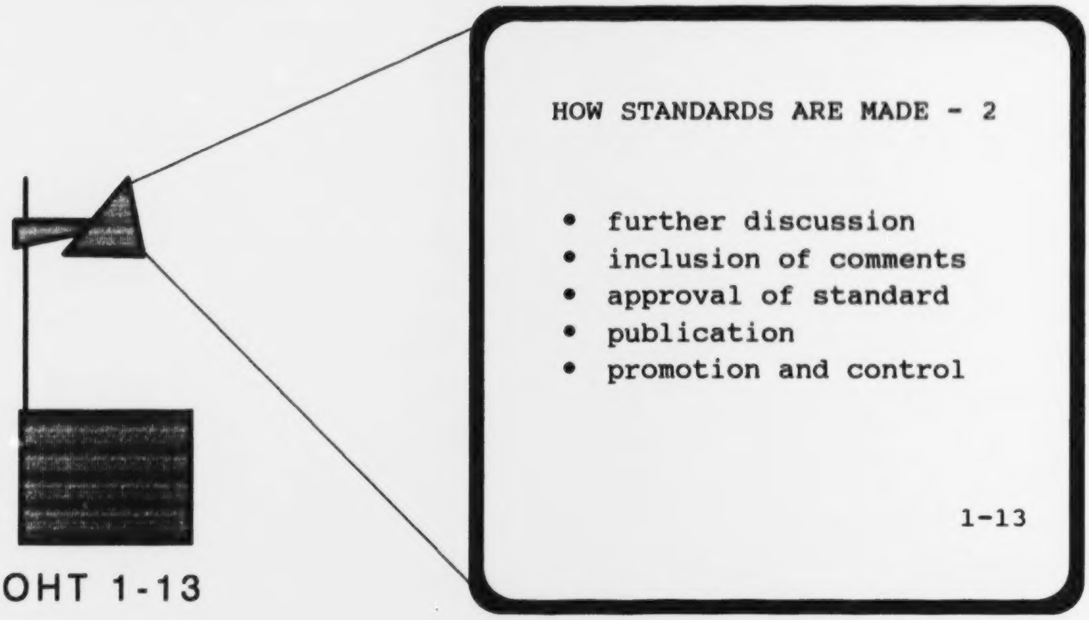
OHT 1-12 continued on back....

OHT 1-12 continued.

DISCUSSION will be undertaken by a working group or special commission composed of experts in the subject field. This will be set up by the Standards Body to examine the draft proposals. This should lead to a set of amended proposals.

The AMENDED PROPOSALS form the basis for the Draft Standard.

A DRAFT STANDARD is then drawn up from the Amended Proposals.



HOW STANDARDS ARE MADE - 2

- further discussion
- inclusion of comments
- approval of standard
- publication
- promotion and control

1-13

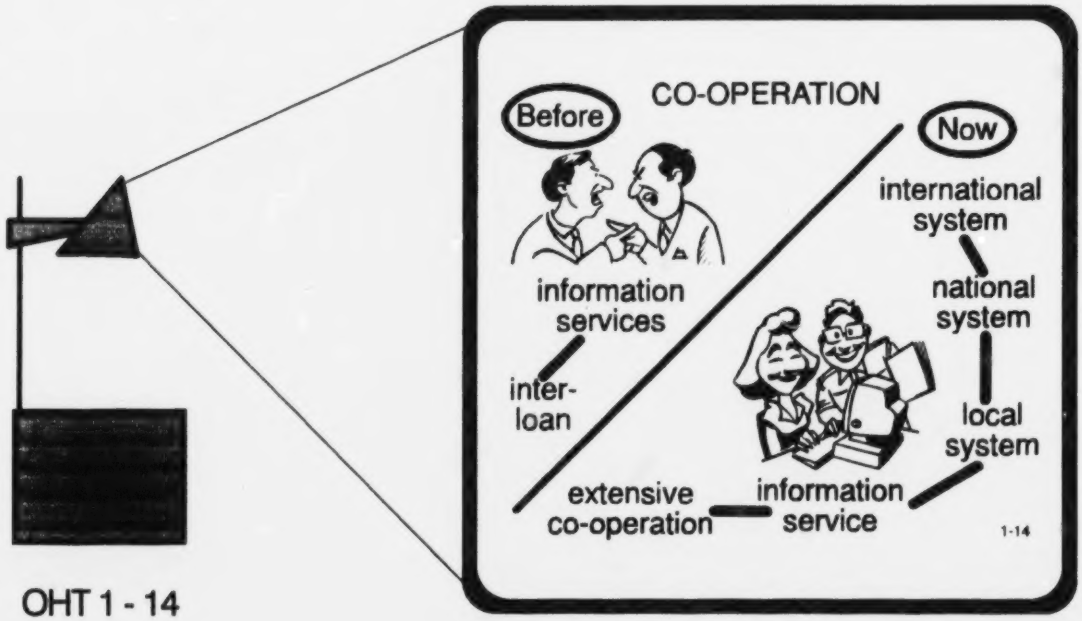
OHT 1-13

FURTHER DISCUSSIONS will be organised by the Standards Body and the draft Standard will perhaps be voted on by member bodies and interested institutions. COMMENTS will be incorporated where appropriate.

The draft Standard with any amendments will be APPROVED AND PUBLISHED by the Standards Body.

PROMOTION AND CONTROL will be undertaken by the Standards Body, and the Committee, as well as by co-ordinating and supervising bodies in the field.

OBJECTIVE 6. AREAS IN INFORMATION HANDLING WHERE STANDARDISATION NEEDS TO BE APPLIED


CO-OPERATION
Before
information services
inter-loan
extensive co-operation
information service
Now
international system
national system
local system
1-14

OHT 1 - 14

Before standards began to be developed in the field of information handling, each information specialist developed their own methods and working procedures. Such co-operation as there was, involved lending books to each other. But from this has grown local, regional, national and now international co-operation in many areas. This requires standardisation to be effective.

***NOTE** - this topic is dealt with in greater detail at the beginning of **Module 2**. If **Module 2** is going to follow this session or is to be used later on in a course, Instructors may wish to indicate this to participants.*

To enable information services and co-operative systems to work together effectively at local, national and international levels - a high level of standardisation between them is of the greatest importance.

OHT 1-15

AREAS IN INFORMATION HANDLING FOR STANDARDISATION - 1

- bibliographic control
- subject analysis and retrieval
- machine readable bibliographic information
- management of document collections

1-15

Which areas in information handling require standardisation?

***NOTE** As most of these subjects are covered more fully in other parts of the programme, it is only necessary to show OHT's 1-15 and 1-16 with brief comment upon each point.*

Bibliographic control - to enable library catalogues, national bibliographies and other bibliographic records to be understood and used widely. Bibliographic descriptions - headings - the organisation of records all need to be standardised.

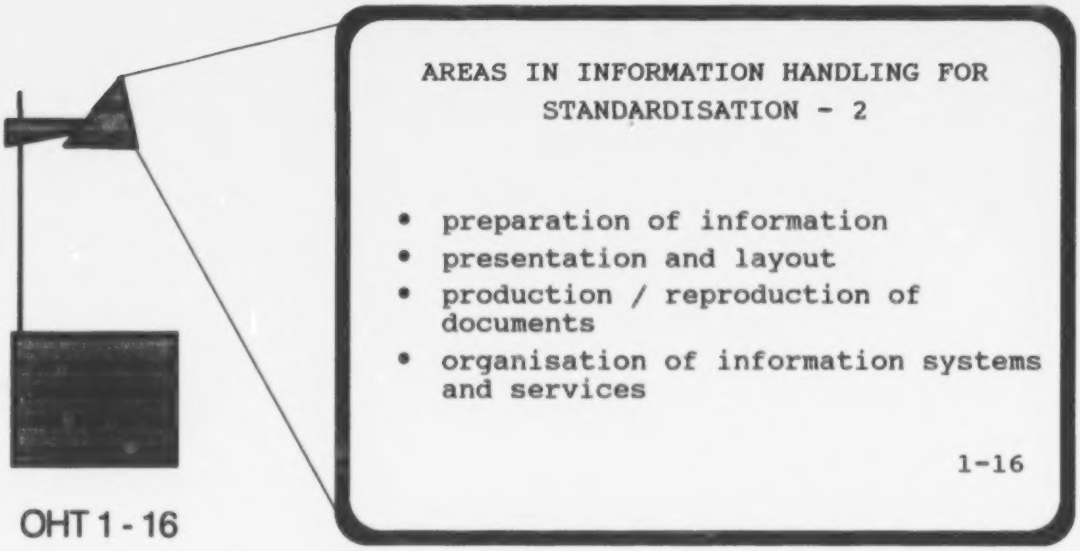
Subject analysis and retrieval. Standardisation is also highly desirable in classification schemes - subject headings - thesauri - indexing and abstracting, among others.

Machine readable bibliographic information. Standardisation is essential when publishing bibliographic information in machine readable form. This should cover the use of equipment - networking - the interconnection of systems - as well as the style of bibliographic formats used.

OHT 1-15 continued on back...

OHT 1-15 continued.

Management of document collections. Standardised practices should also be applied to the acquisition, storage, safety and repair of documents - space requirements, buildings and fittings - lighting, heating and ventilation - and levels of service.



OHT 1 - 16

AREAS IN INFORMATION HANDLING FOR STANDARDISATION - 2

- preparation of information
- presentation and layout
- production / reproduction of documents
- organisation of information systems and services

1-16

Preparation of information. Punctuation - the use of abbreviations - and the inclusion of references - need a standardised approach when presenting or publishing information.

Presentation and layout. Standardisation is required in the way the text is organised and arranged - in the use of citations and notes - in indexing and in proof reading.

Production and reproduction of documents. Whatever format the information is to be presented in, for example in a book, a magnetic tape or a CD-ROM, a standardised approach to its production is required.

OHT 1-16 continued on back...

OHT 1-16 continued.

Organisation of information systems and services. The management and administration of information services are all areas which can benefit from standardised practices. These should be applied to information policies - the planning and organisation of services and networks - and staff education, training and performance.

Standards and standardisation, therefore, are critical to the effective management of information services, to co-operation with other services and to the international availability of information.

NOTE *A short discussion period may be appropriate here.*

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package
on
Standardisation in Information Handling

Module 1

Overhead transparency master copies

Photocopy onto plastic sheets approved by the Photocopier Manufacturer ONLY. Copies should be the same size as the originals, with at least a one centimetre margin all round.

General Information Programme

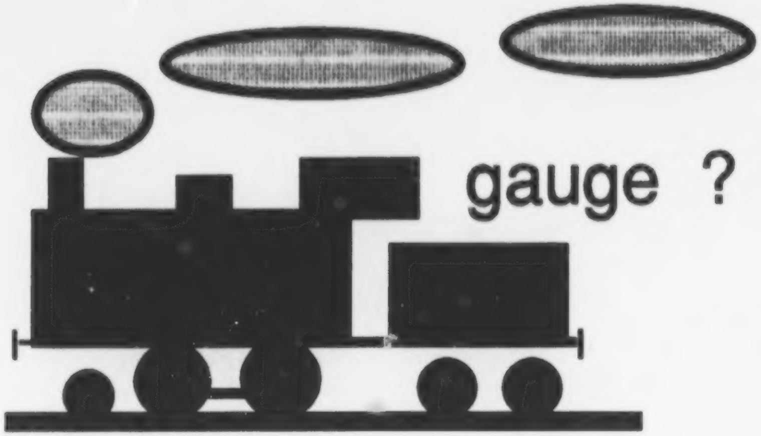
STANDARDISATION IN INFORMATION HANDLING

SUBJECT OUTLINE

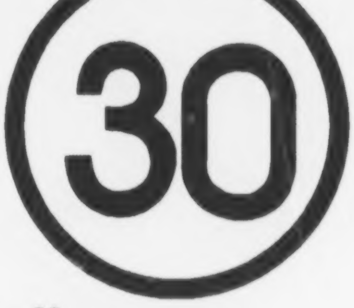
- what are standards ?
- why have standards ?
- why international standards ?
- what regulations exist ?
- how are standards made ?
- which areas of information handling require standardisation ?

WHY HAVE STANDARDS ? - 1

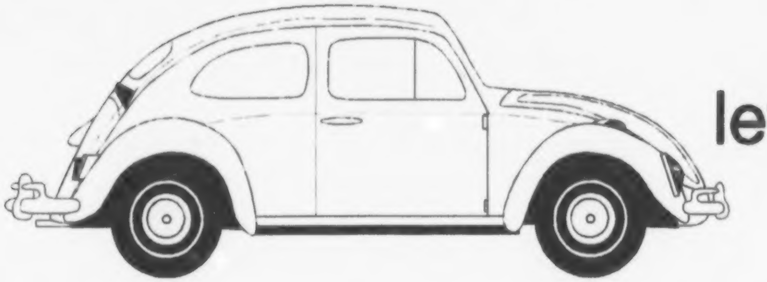
to make human communication possible



gauge ?



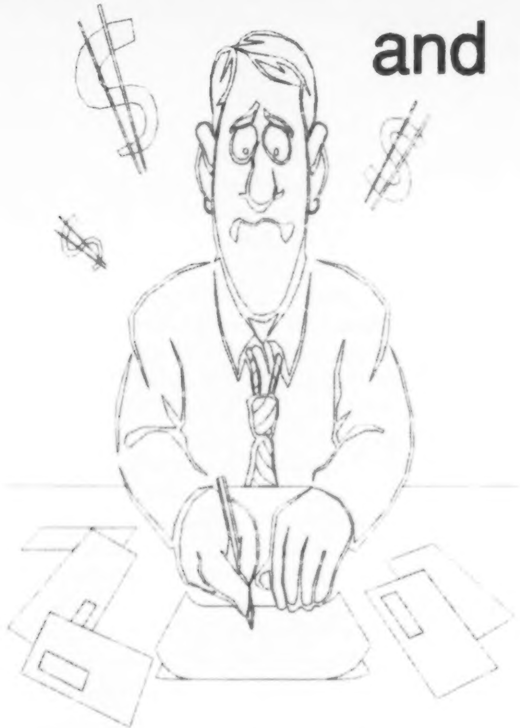
miles or kilometres ?



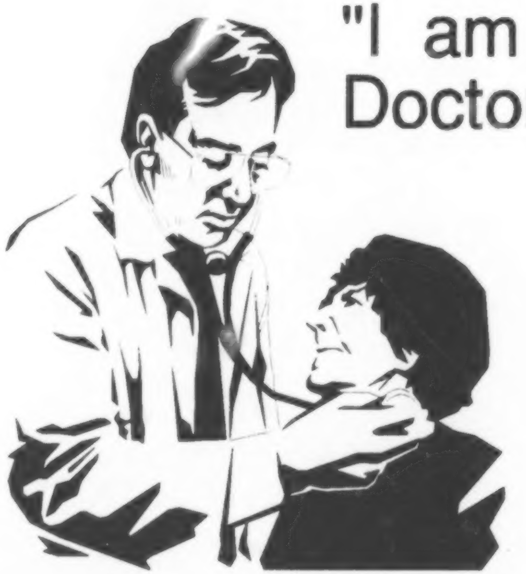
left or right ?

WHY HAVE STANDARDS ? - 2

to make human work more effective and productive

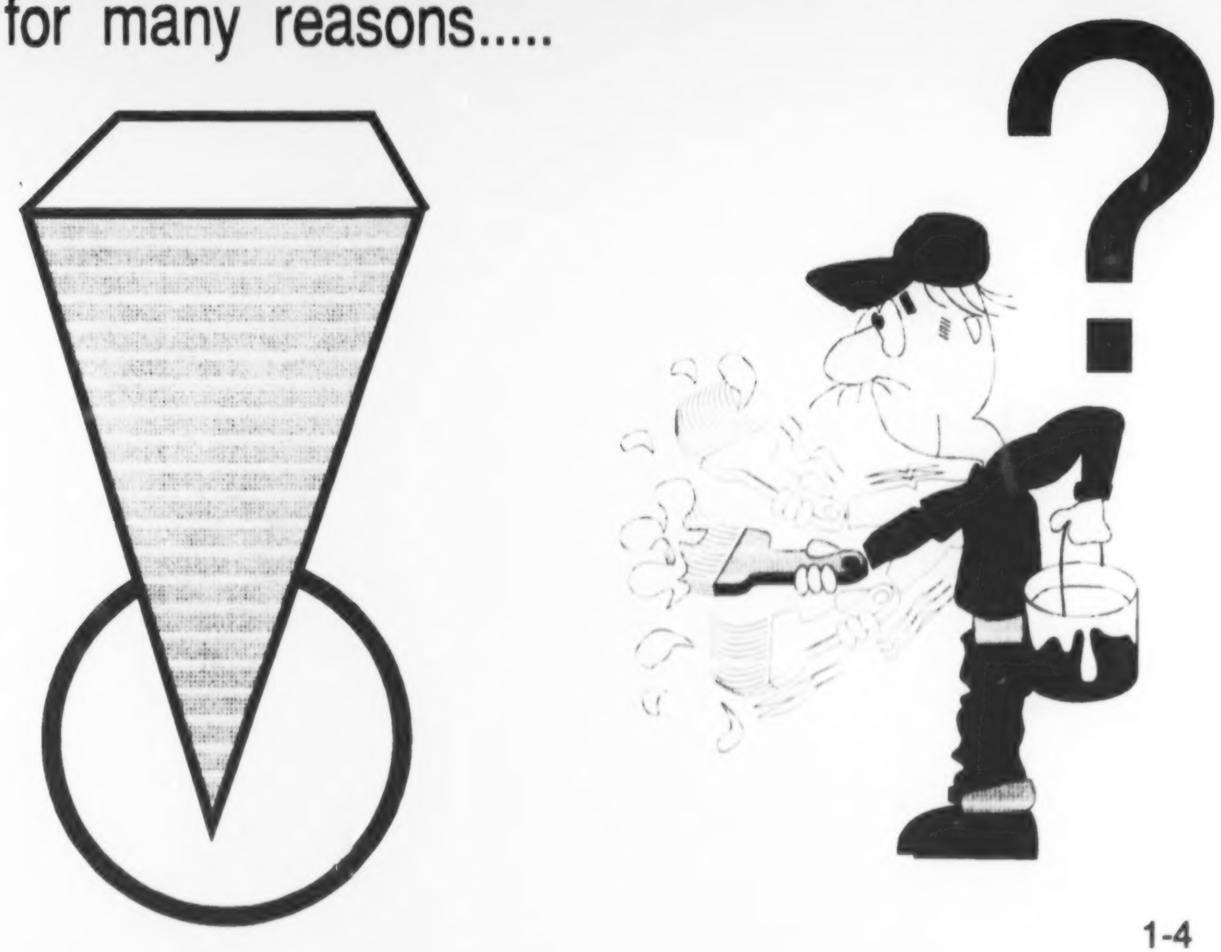


"I try to do everything !"



"I am a Doctor"

WORK SHARING can fail for many reasons.....



WORKSHARING PROBLEMS CAN BE SOLVED BY:-

- agreeing to the STANDARDISATION of sizes, methods and systems, and terminology.

THIS RESULTS IN:-

- transfer of knowledge
- uniformity of practice
- supplementing experience
- guidelines for practice and training.

FEATURES OF STANDARDS - 1

STANDARDS are NORMS

They are normative - they create, prescribe or impose a standard or norm.

They cover specific technologies, products and procedures.

FEATURES OF STANDARDS - 2

STANDARDS also:

cover specific geographic areas

are prepared by approved bodies

- Standards Bodies
- Standardising Bodies

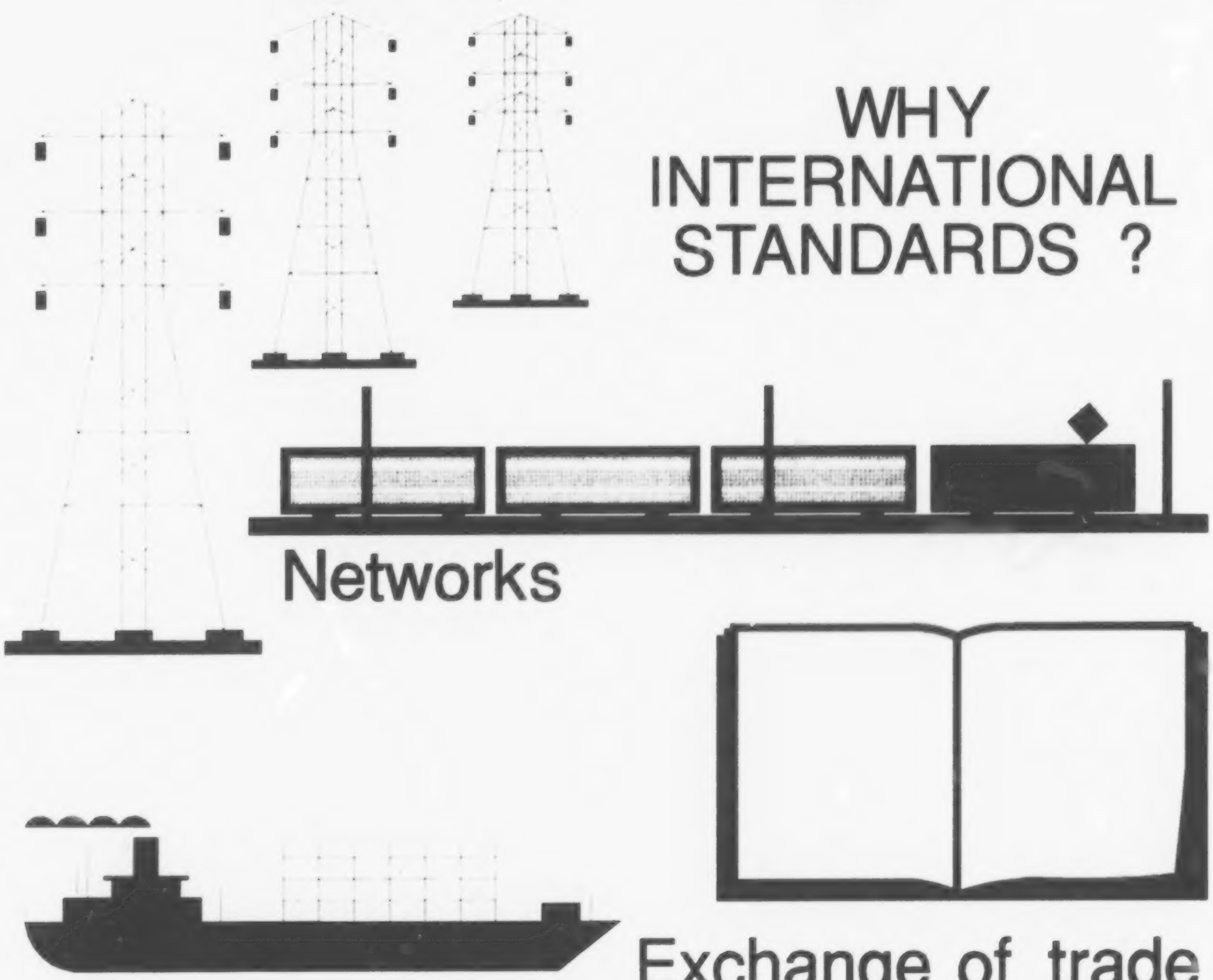
FEATURES OF STANDARDS - 3

STANDARDS:

are also based on an agreement of best practice

and need regular updating

WHY INTERNATIONAL STANDARDS ?



Networks

Exchange of trade and ideas

1-9

WHY HAVE NATIONAL STANDARDS ?

- to enable international standards to be applied
- to standardise language and terms
- to standardise details where international agreement is not possible or necessary

WHAT REGULATIONS EXIST ?

STANDARDS

- draft and approved

STANDARD-LIKE DOCUMENTS

- recommendations
- rules
- guidelines
- codes of practice
- instructions
- technical reports
- handbooks, manuals

HOW STANDARDS ARE MADE - 1

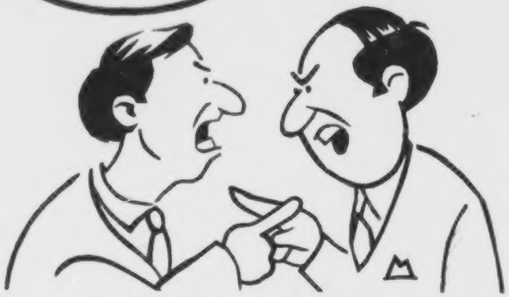
- ○ planning
- ○ analysis
- ○ defining principles
- ○ draft proposals
- ○ discussion
- ○ amended proposals
- ○ preparing draft standards

HOW STANDARDS ARE MADE - 2

- ○ further discussion
- ○ inclusion of comments
- ○ approval of standard
- ○ publication
- ○ promotion and control

CO-OPERATION

Before



information services

inter-loan

Now

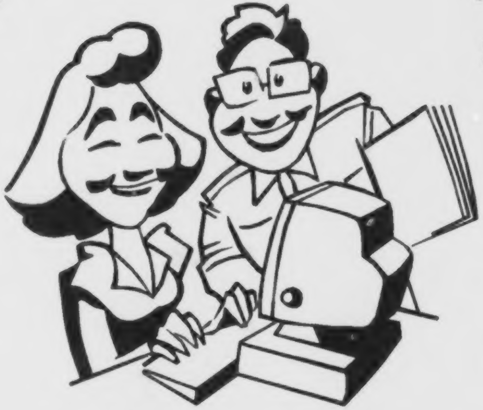
international system

national system

local system

information service

extensive co-operation



AREAS IN INFORMATION HANDLING FOR STANDARDISATION - 1

- bibliographic control
- subject analysis and retrieval
- machine readable bibliographic information
- management of document collections

AREAS IN INFORMATION HANDLING FOR STANDARDISATION - 2

- preparation of information
- presentation and layout
- production / reproduction of documents
- organisation of information systems and services

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 2

International standardisation bodies concerned with information handling

General Information Programme

INSTRUCTORS

PLEASE read **Module 0 - General Introduction to the Teaching Package,** before using this Module. It contains recommendations on how to use the Programme most effectively.

MODULE 0 also contains:

* A list of **ACRONYMS** giving the full titles of organisations referred to in this Teaching Package.

* A **BIBLIOGRAPHY** of documents referred to. These are followed by a [number] in the Module - full details are given in numerical order in the Bibliography.

* **ADDRESSES** of some major organisations denoted by a [letter] in the Module, are listed at the end of the BIBLIOGRAPHY.

* A **GLOSSARY** of computing terminology.

INTRODUCTION TO MODULE 2

This Module follows on from Module 1 in that it is concerned with the activities of some of the major international standardisation bodies. The Module concentrates on their involvement in the field of information handling.

As this Module deals with a range of International Organisations which may at first seem somewhat remote from the daily experience of some participants, it is recommended that the Instructor gives examples of the influence of these organisations upon local practice wherever possible to help students appreciate their importance.

TIMING

AS A LECTURE

Given as it stands, this Module will last approximately 35 minutes. If local examples are added by the Instructor it will take correspondingly longer.

AS A SEMINAR

This Module, with the addition of local examples and documents published by the organisations mentioned, and with discussion, should last for approximately one hour.

Introduction continued on back...

AIM

To familiarise participants with the major international organisations concerned with information standardisation.

OBJECTIVES

TO SHOW:-

1. the activities of ISO, the International Organisation for Standardisation

2. the activities of international bodies concerned with standardisation for information handling.

BACKGROUND READING

Instructors may wish to consult Walt Crawford's book *'Technical standards: an introduction for libraries'* and Henriette Avram's article *'Organisations contributing to the development of library standards'* for further information. [1, 2]

IT IS RECOMMENDED THAT

IN SEMINARS AND SHORT COURSES, Instructors should give a copy of the Bibliography in the General Introduction to all participants. The Bibliography can have further items added to it as appropriate and be updated as new standards are published.

Copies of HANDOUTS 1 and 2, to be found in the APPENDIX starting on page 27 of this Module should also be given to participants.

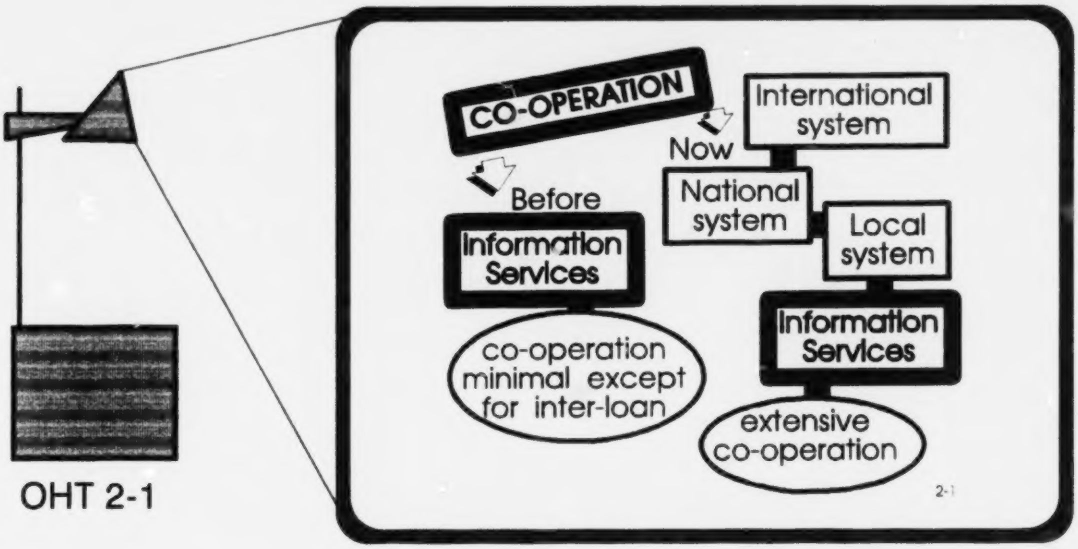
IN LECTURES IN A LIBRARY AND INFORMATION SCIENCE SCHOOL, participants should be made aware of where they can obtain copies of the Bibliography and Handouts for further study.

TEACHING NOTES

The teaching notes which follow can be used in two ways. EITHER they can be read aloud, using the accompanying OVERHEAD TRANSPARENCIES. OR they can form the basis of the Instructor's own presentation to which additional materials and overhead transparencies can be added where appropriate.

Text in **Bold** or *Italic* is for the information of the Instructor only and should not be read aloud.

TEACHING NOTES



OHT 2-1

CO-OPERATION

Before

Information Services

co-operation minimal except for inter-loan

Now

International system

National system

Local system

Information Services

extensive co-operation

2-1

Before the development of standards in the field of information handling, information specialists had to develop their own methods and working procedures. This was often done in isolation, and the 'wheel was often re-invented' to do the same task. Unfortunately these tasks, common to most organisations dealing with information, were carried out in significantly different ways.

Early information specialists did not really consider the need to operate in a similar way to other organisations in the information handling field. Such co-operation as existed was limited to the localised lending of books to each other. But from this has grown local, regional, national and now international co-operation in many areas - and this has led to the development of formalised information systems.

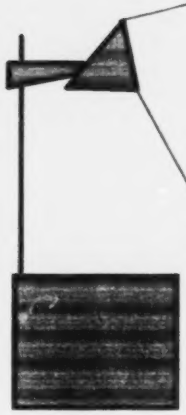
2-1 continued on back...

OHT 2-1 continued

Today, any information system is made up of a number of participating members. And computerisation is speeding up developments in both the information systems themselves and within their participating services. Thus there is a paramount need for standardisation to ensure the regulation, unification, rationalisation and promotion - of these systems - and between these systems.

Nowadays no information service or system should develop its own unique methods of dealing with working procedures - without initial research into standardisation. For there may be a national or international standard already available to cover this procedure. And the development of a unique approach would ultimately be counter-productive.

A wide range of international and national standards, and other standard-like documents are now available. They cover some but not all aspects of the organisation of an information service or system.



OHT 2-2

INTERNATIONAL BODIES CONCERNED WITH STANDARDISATION FOR INFORMATION

- ISO
- Unesco / PGI and standardising bodies established within its framework
- International non-governmental organisations
- International information systems serving compatibility
- International subject orientated information systems and organisations

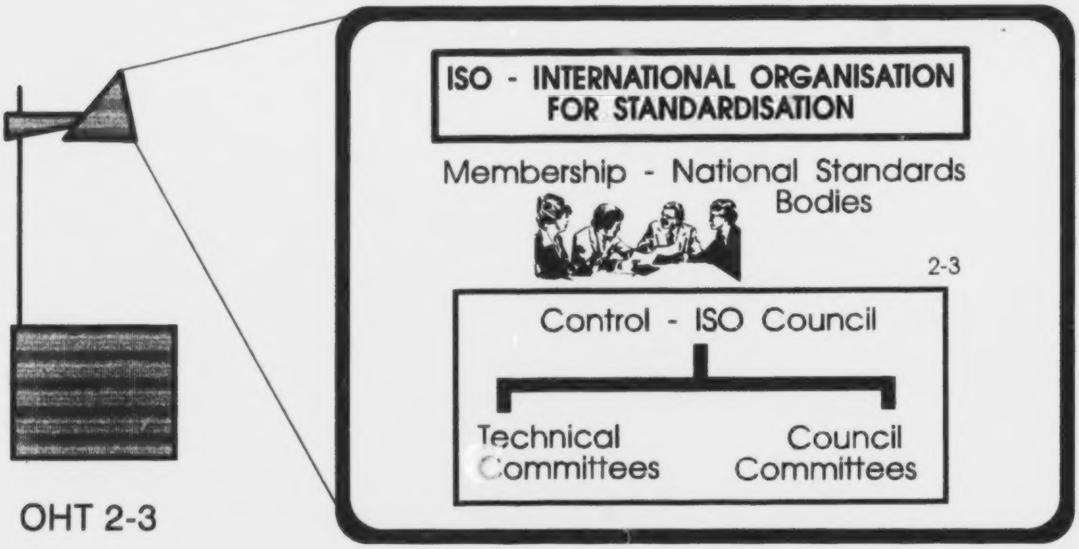
2-2

In this session we are going to examine the work of major international bodies who have produced many of these standards and who are concerned with standardisation in the handling of information.

The various types of bodies are listed on the overhead transparency.

NOTE Allow students to read the list before proceeding to the next transparency. There is no need to give any further detail at this stage as each category is dealt with in the Module.

OBJECTIVE 1. THE ACTIVITIES OF THE INTERNATIONAL ORGANISATION FOR STANDARDISATION.



ISO - INTERNATIONAL ORGANISATION FOR STANDARDISATION

Membership - National Standards Bodies

2-3

Control - ISO Council

Technical Committees

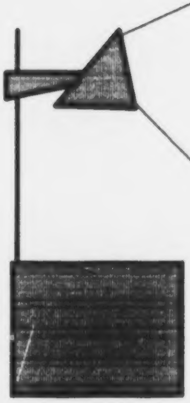
Council Committees

OHT 2-3

There are several international organisations who have a concern with standardisation, such as the International Electrotechnical Commission, or IEC. [I]

However, the international organisation which most concerns information workers is the International Organisation for Standardisation. [3][A] This is abbreviated to ISO for convenience.

The national standards bodies of approximately 90 countries are members of ISO. The General Assembly of ISO elects the Council. The Council creates TECHNICAL COMMITTEES and COUNCIL COMMITTEES to act for the Council in technical areas or special fields of interest.



OHT 2-4

ISO – COUNCIL

- plans, controls technical work
- creates TECHNICAL COMMITTEES
- accepts INTERNAT. STANDARDS for publication
- creates COUNCIL COMMITTEES to oversee special areas

ISO – CENTRAL SECRETARIAT

- organisation of work of ISO

2-4

The Council is responsible for planning and governing the technical work of ISO. The TECHNICAL COMMITTEES undertake the work. Each Committee is allocated its own secretariat to carry out the administration.

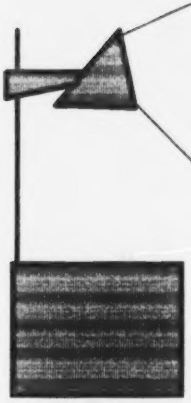
The Council considers and accepts the International Standards produced by the Technical Committees and approves their publication.

The COUNCIL COMMITTEES are appointed to act for the Council in special areas of interest. These include Committees responsible for planning (PLACO), standardisation in developing countries (DEVCO) and in information (INFCO).

OHT 2-4 continued on back...

OHT 2-4 continued

The CENTRAL SECRETARIAT is responsible for the day to day work of ISO. Amongst its duties are the planning and co-ordination of technical work; convening and assisting the committees; dealing with draft proposals; and publishing and distributing International Standards.



OHT 2-5

ISO – TECHNICAL COMMITTEES [TC–S]

- have PARTICIPATING [P-] and OBSERVER [O-] members
- have an approved title and scope
- establish a programme of work
- have a secretariat
- can appoint Sub-Committees and Working Groups

2-5

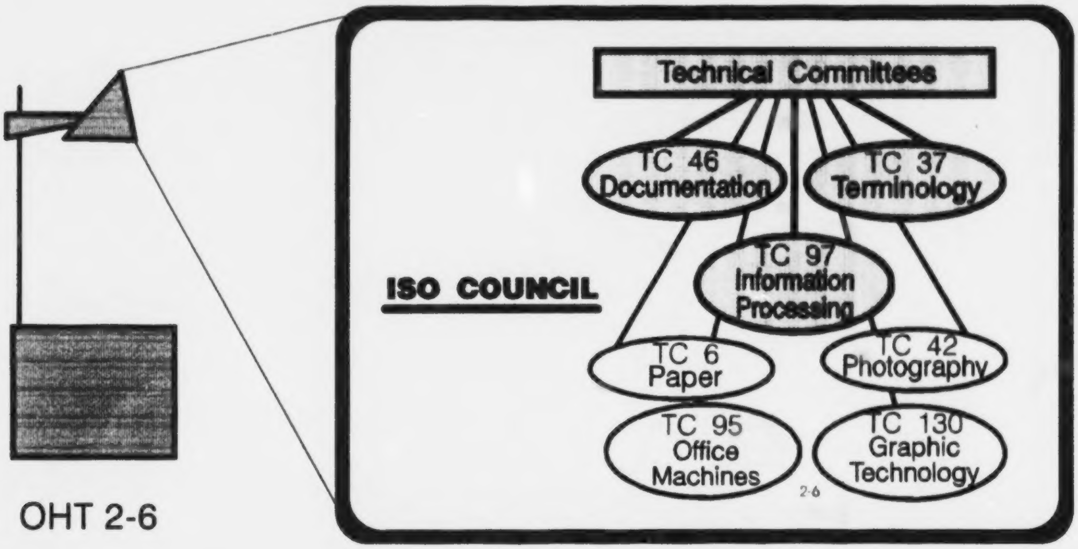
Technical Committees have two types of membership, Participating and Observers. These are designated P- and O- respectively. Participating members of the Committees are appointed by the MEMBER BODIES as part of their membership rights of ISO. MEMBER ORGANISATIONS of ISO specifically interested in the field of work of the Technical Committee can be represented by Observers.

The title and scope of each Technical Committee is approved by the Council Committee responsible for planning (PLACO). The Technical Committee then establishes its programme of work - the administration of which is carried out by the Secretariat appointed by the Council.

OHT 2-5 continued on back...

OHT 2-5 continued

A Technical Committee may appoint Sub-Committees to undertake particular parts of their programme of work. Both Technical Committees and Sub-Committees may create Working Groups composed of individually named specialists to carry out specific tasks.


Technical Committees
TC 46 Documentation
TC 37 Terminology
ISO COUNCIL
TC 97 Information Processing
TC 6 Paper
TC 42 Photography
TC 95 Office Machines
TC 130 Graphic Technology
2-6

OHT 2-6

There are a number of Technical Committees preparing standards concerned with the handling of information. The majority of the international standards in the field of information handling have been prepared by the Technical Committee for Documentation, ISO/TC 46. This has a number of Sub-committees and Working Groups covering various aspects of information work.

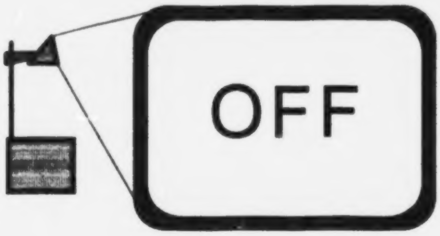
There are other Technical Committees - including Terminology TC/37; and Micrographics TC 171 - which have also produced international standards in this field.

Other Technical Committees are concerned with associated subjects including Paper, Photography, Office Machines and Graphic Technology.

OHT 2-6 continued on back...

OHT 2-6 continued

A proposal for a new International Standard may come from members of Technical Committees, from the Council or from an organisation outside ISO. Once accepted, the appropriate Technical Committee will produce a working plan for approval by the Council Committee for Planning (PLACO).



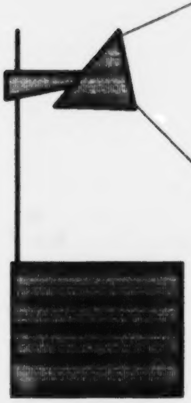
The procedure for the preparation of International Standards is fairly similar to that discussed in / on ....
....

NOTE - remind participants when Module 1 was dealt with. The Instructor may wish to refer back to Overhead transparencies 1-12 and 1-13.

International Standards are normally reviewed every five years.

NOTE. Where participants in SEMINARS require more information on the working procedures of ISO, copies of HANDOUTS 1 and 2 at the end of this Module should be made and distributed to them. Students in LECTURES should be told where they can refer to these HANDOUTS.

OBJECTIVE 2. THE ACTIVITIES OF INTERNATIONAL BODIES CONCERNED WITH STANDARDISATION FOR INFORMATION HANDLING.



OHT 2-7

Unesco — PGI

AIM - availability and use of information world-wide

OBJECTIVES - development of:

- national information policies
- methods, norms, standards
- information infrastructures
- databases / use of new technology
- networking
- education and training

2-7

A major STANDARDISATION effort of interest to information specialists is carried out by Unesco, working through its General Information Programme or PGI. [B]

The General Information Programme aims to promote the availability and use of information for development, all over the world. It is concerned with the development of information policies nationally and regionally, and with the necessary information infrastructures. These include libraries, archives, information and documentation centres and their services.

OHT 2-7 continued on back...

OHT 2-7 continued

PGI is also concerned with the design and development of data bases and with the use of the associated computer, audiovisual and telecommunications technologies for information handling. This leads on to the development of regional and international networks - not only in science and technology - but also in the fields of education, culture, communication and the social sciences.

PGI also promotes the education and training of information personnel and users. It provides assistance for the development and strengthening of national and regional training facilities. It also prepares teaching materials and guidelines, for example - on curriculum development. [5, 6]

Unesco - PGI also has a standardising function.

OHT 2-8

Unesco - PGI's STANDARDISATION FUNCTION

- promotes preparation / use of standards
- publishes standard-like documents e.g. CCF
- co-operates with ISO

2-8

Unesco, through PGI, promotes the development and use of international methods, norms, standards, guidelines and other normative tools applicable to all processes in the information transfer chain.

Thus Unesco acts as a Standardising Body. It publishes guidelines and other standard-like documents and disseminates them widely. An example from this category is the CCF, or Common Communication Format. [7]
NOTE - See Module 7 for details of the CCF.

Details of these documents can be found in the UNISIST Guide to standards for information handling, which explains existing standards and guidelines. [8] Then there is the ISO Handbook - Information transfer, which is a collection of ISO standards in this field, published in co-operation with ISO. [9]

Unesco further co-operates with ISO and its appropriate Technical Committees. It assists in the preparation of international standards by assessing needs - and preparing guidelines to be adapted or adopted as standards.

117

OHT 2-8 continued on back...

OHT 2-8 continued

Unesco has prepared this Teaching Package and other materials to assist training in the field of standardisation.

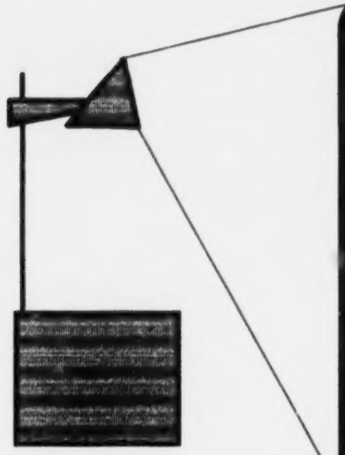
Archives administration and records management are of increasing significance as elements of national information systems. Unesco / PGI has created the 'Records and Archives Management Programme' or RAMP. The basic elements of RAMP reflect and contribute to the overall themes of PGI.

The RAMP programme includes - the role of archives in national information systems - developing standards and other normative tools for the processing and transfer of specialised information - the creation and development of compatible information systems - the international transfer of records - and the training of information specialists in archives administration. [10, 11]

Unesco has provided assistance to the development of many international organisations, systems and programmes. These promote the use of standardised methods.

Examples of such systems and organisations include the International Serials Data System - ISDS, and INFOTERM.
NOTE* *See Module 6

THE ACTIVITIES OF MAJOR INTERNATIONAL NON-GOVERNMENTAL ORGANISATIONS WHICH HAVE A STANDARDISING FUNCTION



OHT 2-9

INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS AND INSTITUTIONS

- undertakes some standardising work
- ISBD's
- UNIMARC
- other standard-like documents and standard tools

2-9

Now we shall examine aspects of the work of three professional non-governmental organisations which undertake some standardising work. The first is the International Federation of Library Associations and Institutions, or IFLA. [C]

IFLA formulated the concept of Universal Bibliographic Control or UBC. This was adopted in 1974 as the basis of the Unesco sponsored programme promoting the use of standardised methods. IFLA also created its UBC Office - now the UBCIM Programme Office - which prepares and publishes the international rules for bibliographic description. [D] These are known as International Standard Bibliographic Descriptions or ISBD's.

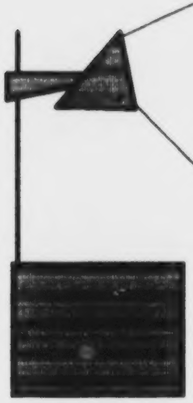
OHT 2-9 continued on back...

OHT 2-9 continued

IFLA, in conjunction with the Conference of Directors of National Libraries, or CDNL, also prepared UNIMARC - the international format for machine readable bibliographic records. This is designed to enable records to be exchanged between national bibliographic agencies.

IFLA has also prepared standard-like documents and standard tools. The areas these cover include inter-library loans - international exchange of documents - library statistics - library buildings and equipment, and so on.

FID AND ICA



OHT 2-10

INTERNATIONAL FEDERATION FOR INFORMATION AND DOCUMENTATION [FID]

- maintains Universal Decimal Classification system
- standardisation of terminology

INTERNATIONAL COUNCIL ON ARCHIVES [ICA]

- promotes standards for archives and microfilming archival records

2-10

Two further standardising bodies are FID, the International Federation for Information and Documentation, [E] and ICA, the International Council on Archives. [F]

FID acts as the international secretariat for the Universal Decimal Classification system, UDC. FID is responsible for maintaining and updating this system which was developed from the Dewey Decimal Classification system. Like Dewey, UDC is used on an international scale.

OHT 2-10 continued on back...

OHT 2-10 continued

FID has consultative status with ISO, working through the Technical Committees in the field of information handling. Through TC 37 Terminology, it takes part in the standardisation of terminology used in information handling. It promotes the use of standards in documentation though its involvement with other ISO Technical Committees and with other international bodies such as WIPO, the World Intellectual Property Organisation.

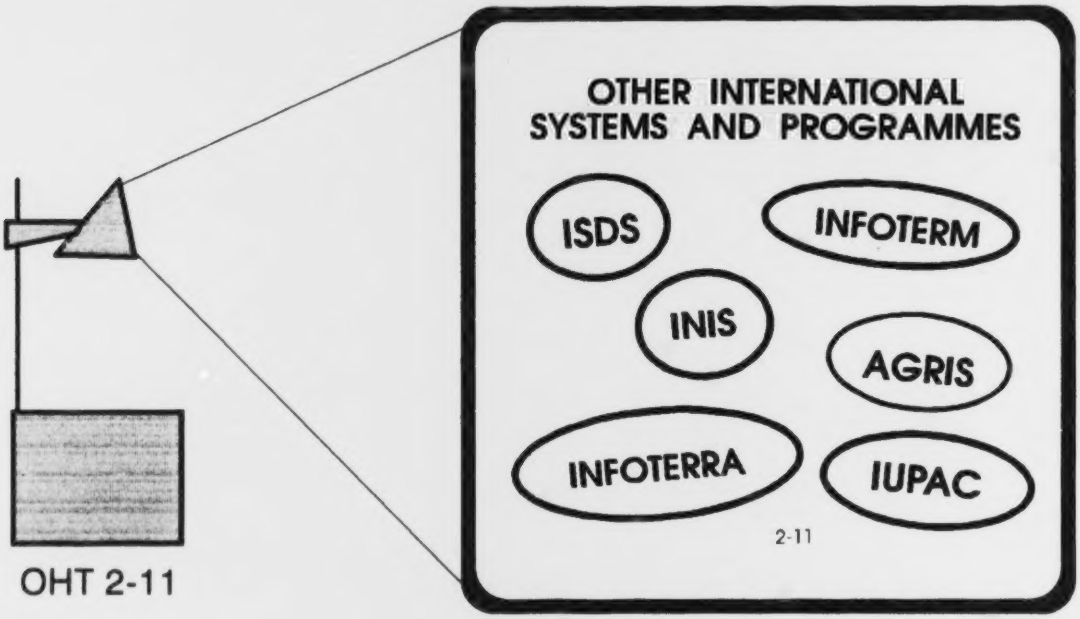
ICA, the International Council on Archives, is involved in the process of standardisation for archives. This is mainly done in co-operation with Unesco, in the framework of the RAMP (Records and Archives Management) Programme. ICA has also established rules and standardised methods for microfilming archival records.

OTHER INTERNATIONAL INFORMATION ORGANISATIONS AND SYSTEMS WHICH INFLUENCE STANDARDISATION IN THE FIELD OF INFORMATION HANDLING

Thus it can be seen that a number of international organisations have a major influence on the process of standardisation in our field.

There are other international bodies, systems and programmes that influence standardisation, though perhaps in a less direct way. The work of these bodies influences and facilitates the daily tasks of those involved in information handling, whether as workers or users. [I]

NOTE. The instructor may either wish to FINISH AT THIS POINT or may wish to conclude by using some of the international information systems and organisations beginning on page 25 as pertinent examples, depending upon the level and interests of the participants.



OHT 2-11

The INTERNATIONAL SERIALS DATA SYSTEM or ISDS.

ISDS is a world-wide network responsible for the allocation of ISSN international Standard Serial Numbers - to publications which comply with the definition of a serial as standardised by ISO. The ISSN is the international unique code for the identification of a serial publication. The International Centre for ISDS in Paris [G] maintains a machine readable database containing all bibliographic records created by the system. In 1990 the network consisted of more than 50 national and regional centres co-ordinated by the International Centre.

The ISDS Manual describes the structure of the system and defines its policies, rules and procedures.[21]

ISDS is therefore the international source of information about serial publications.

OHT 2-11 continued on back...

OHT 2-11 continued

The INTERNATIONAL INFORMATION CENTRE FOR TERMINOLOGY, known as INFOTERM.

INFOTERM was established in 1971 in Vienna jointly by Unesco and the Austrian Standards Institute. It works in liaison with Technical Committee 37 Terminology - of ISO. INFOTERM co-ordinates the work on terminology taking place internationally, and publishes information about standardised terminology.

THE INTERNATIONAL NUCLEAR INFORMATION SERVICE (INIS), of IAEA -

THE INTERNATIONAL INFORMATION SYSTEM FOR AGRICULTURAL SCIENCE AND TECHNOLOGY (AGRIS), of FAO -

and

THE INTERNATIONAL RETRIEVAL SYSTEM OF THE UNITED NATIONS ENVIRONMENTAL PROGRAMME, or INFOTERRA.

These, and other similar systems, prepare in house 'standards' for the transfer of information within the system. Their use within these systems helps to promote the use of international standards.

And finally, the INTERNATIONAL UNION FOR PURE AND APPLIED CHEMISTRY (IUPAC) and similar subject orientated international organisations - act as standardising bodies for specialised terminology, symbols, and the presentation of numerical data.

APPENDIX - HANDOUTS 1 and 2 of MODULE 2

HANDOUT 1

INTERNATIONAL ORGANISATION FOR STANDARDISATION (ISO)

WORKING PROCEDURES

A. NEW WORK ITEMS - WORKING PLAN

1. NEW WORK ITEMS (new international standards to be prepared) should be PROPOSED by a member of the relevant Technical Committee, by another Technical Committee, by a Council Committee, or by an organisation outside ISO, using a special form for the proposal and its JUSTIFICATION.
2. PARTICIPATING members of the Technical Committee APPROVE the new work item by correspondence and allocate (if appropriate) the SUB-COMMITTEE or the WORKING GROUP which will work on it.
3. Each APPROVED work item carries a serial number. It forms the WORKING PLAN of the Technical Committee, to be approved by PLACO (the Council Committee for Planning) and referred to in reports of the Technical Committee.

B. PREPARATION OF INTERNATIONAL STANDARDS

1. WORKING DRAFTS on new work items are prepared by one or more members of the competent Technical Committee or Sub-Committee and are circulated by the Committee Secretariat for consideration by the Participating and Observer members of the Committee.
2. COMMENTS submitted in written form or raised during a meeting are discussed and, if necessary, a new working draft is prepared. This procedure is repeated until the draft is considered as being by CONTENT and FORM ready for registration as a draft proposal.
3. REGISTRATION AS A DRAFT PROPOSAL by the Central Secretariat. The registration number given to the Draft Proposal identifies the item in all subsequent phases.
4. DRAFT PROPOSALS are circulated by the Technical Committee's or its Sub-Committee's Secretariat for discussion at a subsequent meeting, or for comment by correspondence or for a letter ballot.

continued ......

HANDOUT 1 - sheet 1

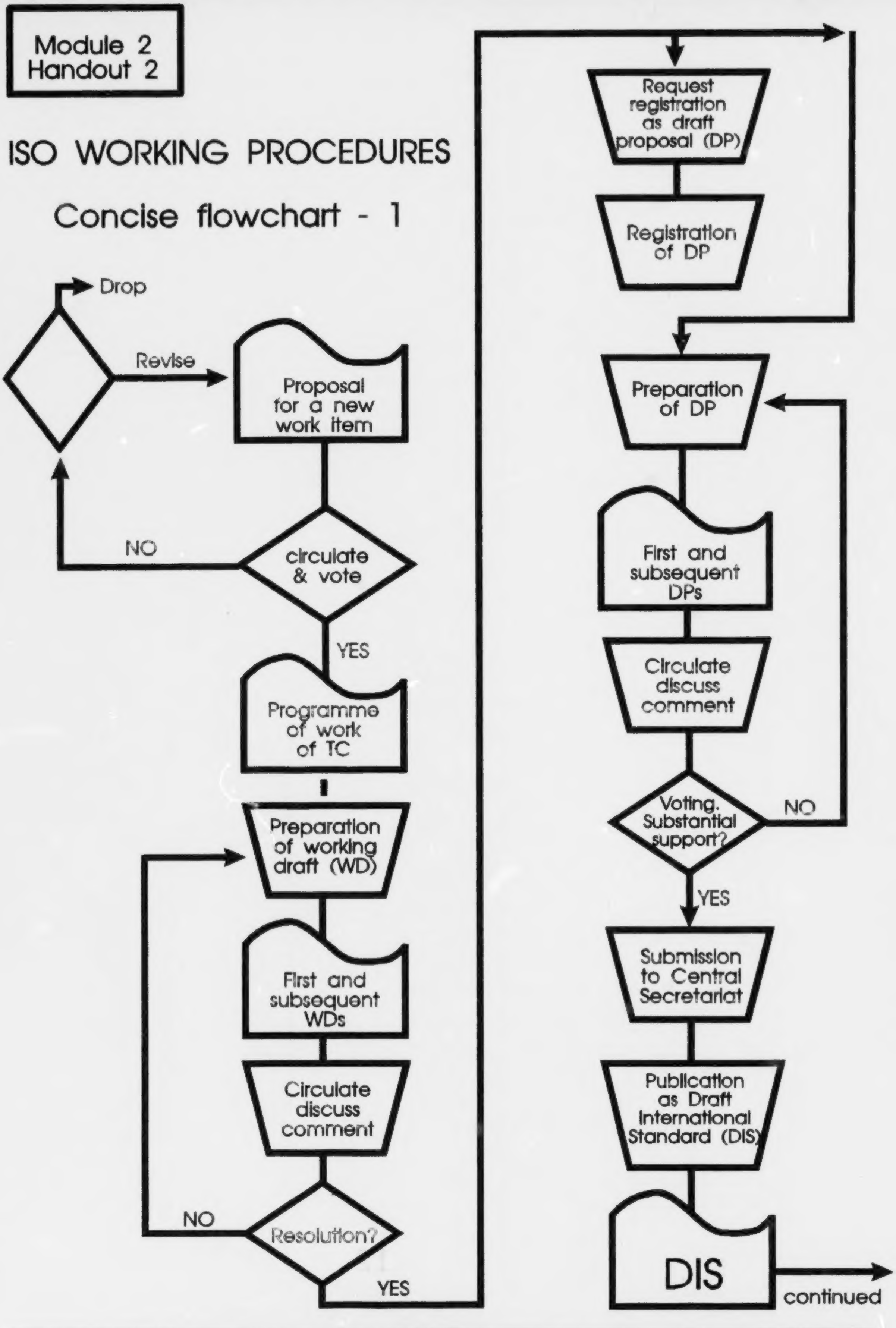
5. COMMENTS are considered and, if necessary, subsequent DRAFT PROPOSALS are prepared and circulated until a substantial majority of the Participating members are in agreement.
6. When substantial support of the Technical Committee members has been obtained, the Secretariat submits the DRAFT PROPOSAL and an explanatory report on it to the Central Secretariat for registration as a DRAFT INTERNATIONAL STANDARD.
7. DRAFT INTERNATIONAL STANDARDS are distributed by the Central Secretariat to all member-bodies and all Participating members of the 'Parent' Technical Committee for voting.
8. VOTING. The vote might be for APPROVAL (with or without comments), DISAPPROVAL (with comments) or ABSTENTION. If the majority of the Participating members and 75% of Member Bodies approve the Draft, the INTERNATIONAL STANDARD can be accepted. If not, the Technical Committee prepares a new draft.
9. COMMENTS should be resolved by the Technical Committee. When this has been done, the ISO Council adopts the INTERNATIONAL STANDARD.
10. The INTERNATIONAL STANDARD is then published by the Central Secretariat.

HANDOUT 1 - sheet 2

Module 2
Handout 2

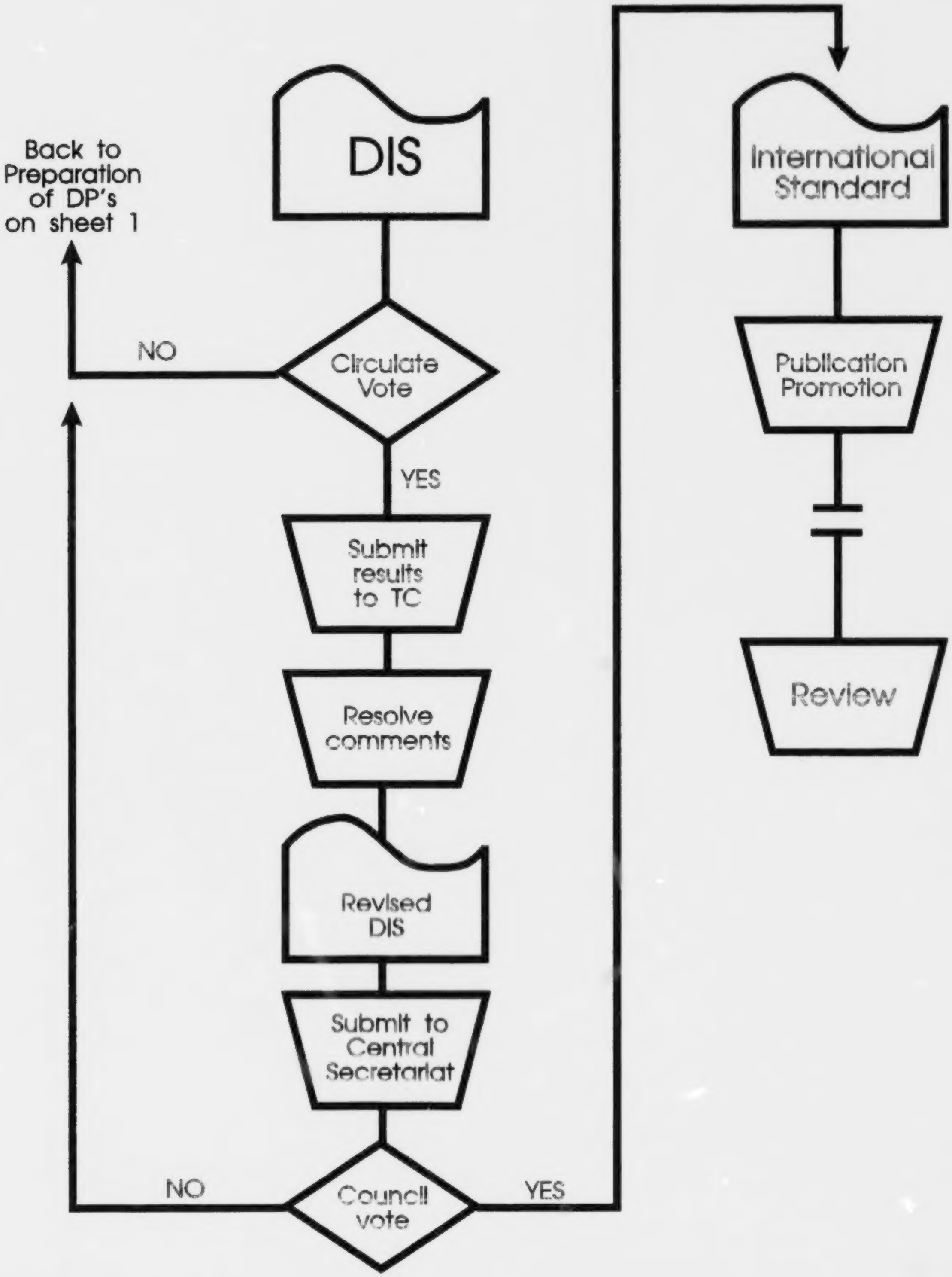
ISO WORKING PROCEDURES

Concise flowchart - 1


Drop
Revise
Proposal for a new work item
NO
circulate & vote
YES
Programme of work of TC
Preparation of working draft (WD)
First and subsequent WDs
Circulate discuss comment
NO
Resolution?
YES
Request registration as draft proposal (DP)
Registration of DP
Preparation of DP
First and subsequent DPs
Circulate discuss comment
Voting. Substantial support?
NO
YES
Submission to Central Secretariat
Publication as Draft International Standard (DIS)
DIS
continued

ISO WORKING PROCEDURES

Concise flowchart - 2


DIS
Back to Preparation of DP's on sheet 1
NO
Circulate Vote
YES
Submit results to TC
Resolve comments
Revised DIS
Submit to Central Secretariat
NO
Council vote
YES
International Standard
Publication Promotion
Review

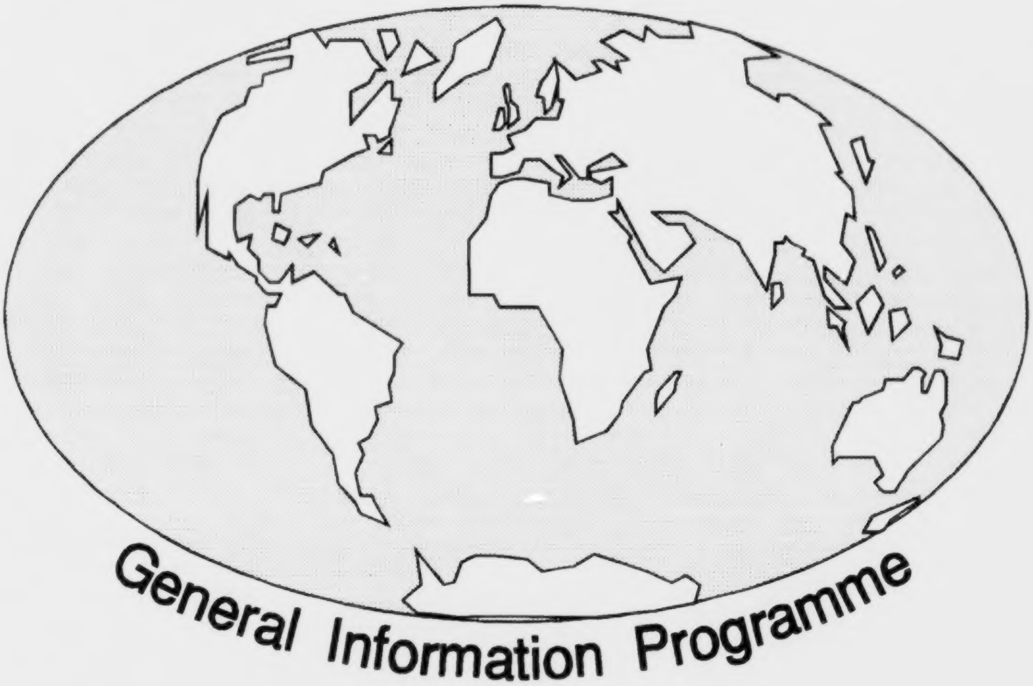
PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 2

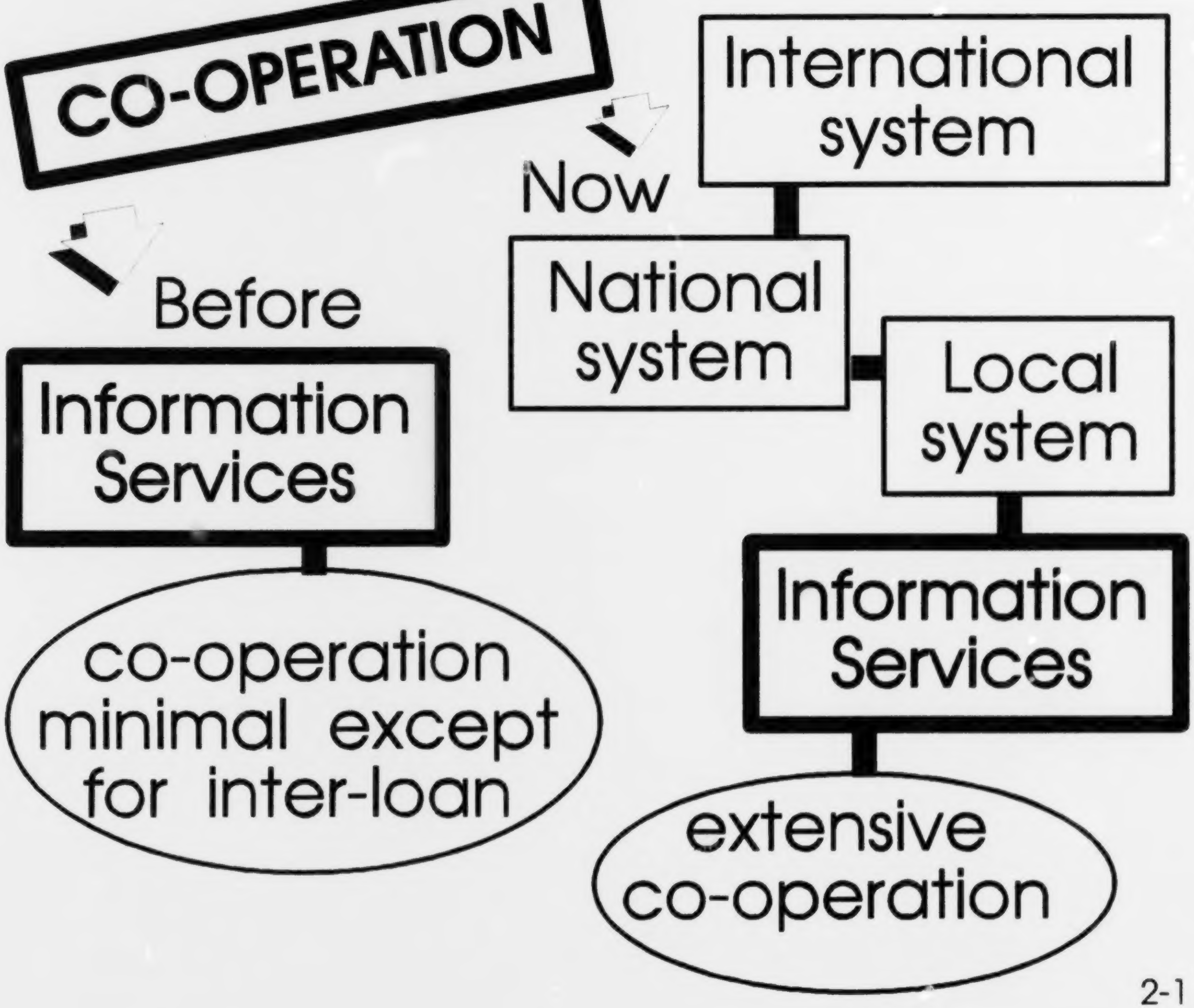
Overhead transparency master copies

Photocopy onto plastic sheets approved by the Photocopier Manufacturer ONLY. Copies should be the same size as the originals, with at least a one centimetre margin all round.



130

CO-OPERATION



Before

Information Services

co-operation minimal except for inter-loan

Now

International system

National system

Local system

Information Services

extensive co-operation

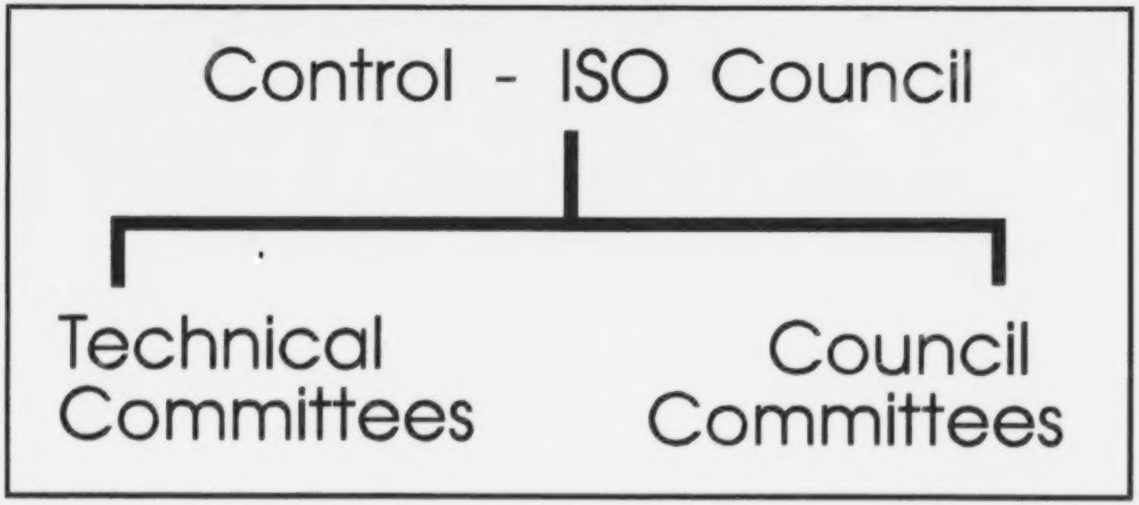
INTERNATIONAL BODIES CONCERNED WITH STANDARDISATION FOR INFORMATION

- ISO
- Unesco / PGI and standardising bodies established within its framework
- International non-governmental organisations
- International information systems serving compatibility
- International subject orientated information systems and organisations

ISO - INTERNATIONAL ORGANISATION FOR STANDARDISATION

Membership - National Standards Bodies

2-3



Control - ISO Council

Technical Committees

Council Committees

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- plans, controls technical work
- creates TECHNICAL COMMITTEES
- accepts INTERNAT. STANDARDS for publication
- creates COUNCIL COMMITTEES to oversee special areas

ISO - CENTRAL SECRETARIAT

- organisation of work of ISO

2-4

ISO - TECHNICAL COMMITTEES (TC)

- have PARTICIPATING [P-] and OBSERVER [O-] members
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- establish a programme of work
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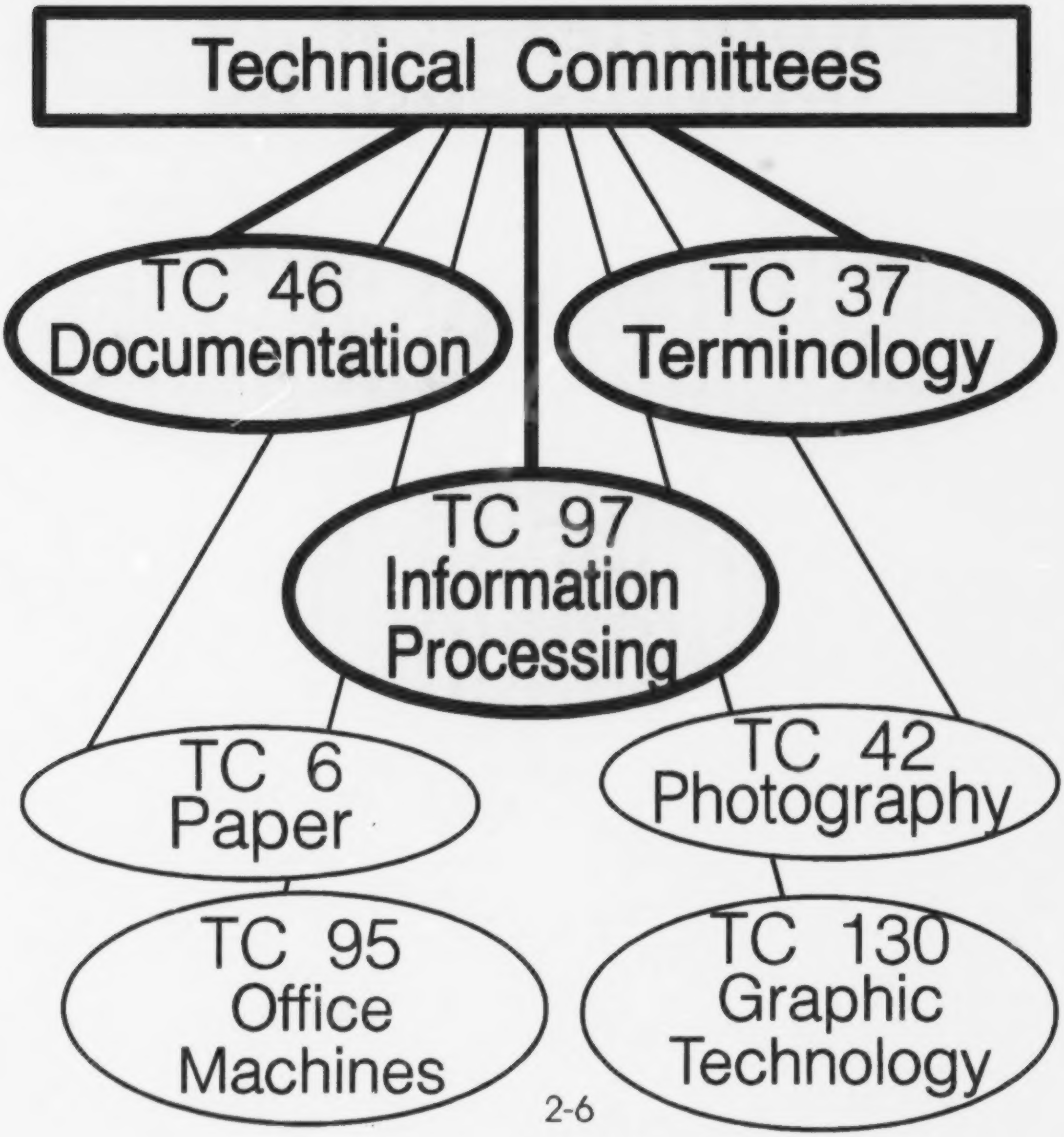
- can appoint Sub-Committees and Working Groups

ISO COUNCIL



Technical Committees

TC 46
Documentation

TC 37
Terminology

TC 97
Information
Processing

TC 6
Paper

TC 42
Photography

TC 95
Office
Machines

TC 130
Graphic
Technology

Unesco - PGI

AIM - availability and use of information world-wide

OBJECTIVES - development of:

- * national information policies
- * methods, norms, standards
- * information infrastructures
- * databases / use of new technology
- * networking
- * education and training

Unesco - PGI

STANDARDISATION FUNCTION

1. promotes preparation / use of standards

2. publishes standard-like documents e.g. CCF

3. co-operates with ISO

IFLA

INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS AND INSTITUTIONS

- undertakes some standardising work
- ISBD's
- UNIMARC
- other standard-like documents and standard tools

INTERNATIONAL FEDERATION FOR INFORMATION AND DOCUMENTATION (FID)

- maintenance of Universal Decimal Classification system
- standardisation of terminology

INTERNATIONAL COUNCIL ON ARCHIVES (ICA)

- promotes Standards for Archives and microfilming archival records

OTHER INTERNATIONAL SYSTEMS AND PROGRAMMES

ISDS

INFOTERM

INIS

AGRIS

INFOTERRA

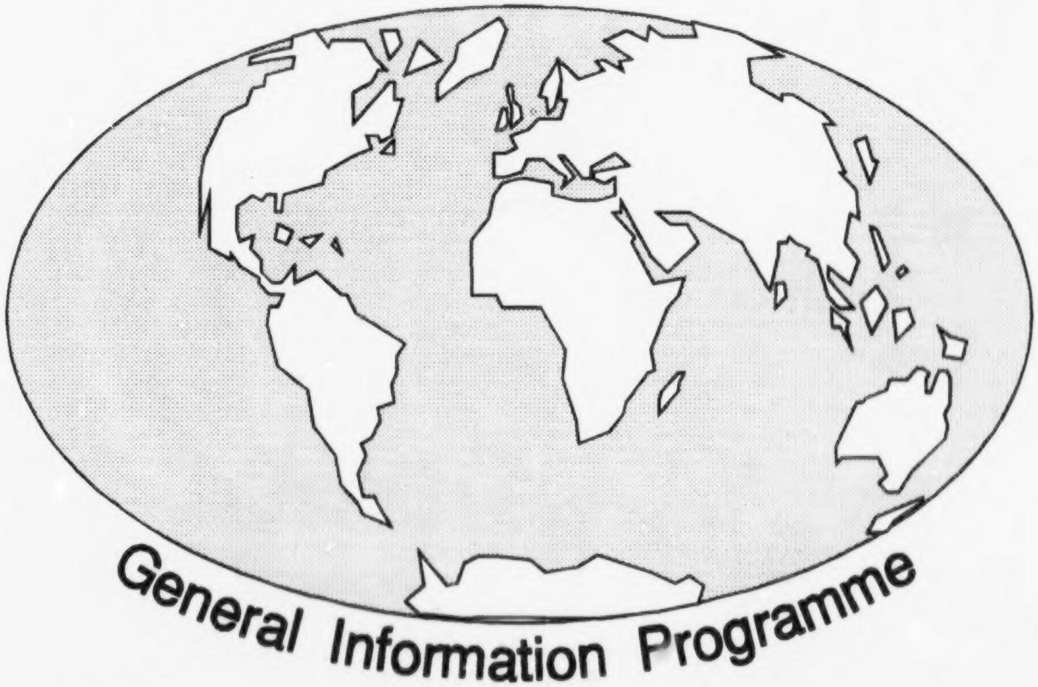
IUPAC

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 3

Computer hardware


General Information Programme

COMPUTER HARDWARE

INSTRUCTORS

PLEASE read **Module 0 - General Introduction to the Teaching Package,** before using this Module. It contains recommendations on how to use the Programme most effectively.

MODULE 0 also contains:

- A list of **ACRONYMS** giving the full titles of organisations referred to in this Teaching Package.
- A **BIBLIOGRAPHY** of documents referred to. These are followed by a [number] in the Module - full details are given in numerical order in the Bibliography.
- **ADDRESSES** of some major organisations denoted by a [letter] in the Module, are listed at the end of the BIBLIOGRAPHY.
- A **GLOSSARY** of computing terminology.

INTRODUCTION TO MODULE 3

This Module is essential for THOSE STUDENTS WITH LITTLE OR NO PREVIOUS EXPERIENCE OF COMPUTERS in that it gives them the necessary background to enable them to understand the information contained in other Modules in this Teaching Package.

It could also be used as AN INTRODUCTION TO COMPUTER CONCEPTS FOR NEW UNDERGRADUATE AND POSTGRADUATE STUDENTS.

With additional materials, it could act as REVIEW material for those who have already had some experience with computers.

However, this Module does not set out to be a comprehensive course on the use of computers in libraries and information services. While it contains useful structured information that could be included in such a course, an instructor would have to expand this material and use additional data on a variety of topics. These would include the costs and supplies of hardware; ergonomic and other environmental factors affecting efficient machine use; maintenance of hardware; and communications between users and computers, and computers and computers. Additionally it might be felt necessary to cover the history and future development of computers, and include an introduction to communication technology.

TIMING

As A Lecture

Given as it stands, this Module will last approximately 45 minutes.

As A Seminar

This Module, including the identification and demonstration of the various components of a microcomputer, should last for approximately 2 hours.

Introduction continued on back....

Introduction to Module 3 continued.

AIM

To familiarise participants with computer systems.

OBJECTIVES

To show:-

1. the concepts and basic terminology of computer systems,
2. the major functions of computers (input, processing, storage, and output),
3. common ways of configuring computer components,
4. guidelines for evaluating computer systems.

IT IS RECOMMENDED THAT:

wherever possible, the Instructor has a MICROCOMPUTER and examples of storage disks and programs in the teaching area on which the features discussed in this Module can be shown. It is not necessary to have the microcomputer working during the lecture session, but it would be beneficial to have it working during a seminar session when more time could be devoted to demonstrating the various features. It is essential that the Instructor should be thoroughly familiar with the operation of the Microcomputer before undertaking demonstrations in a seminar session.

in SEMINARS AND SHORT COURSES Instructors should give a copy of the BIBLIOGRAPHY and the GLOSSARY in Module 0 to all participants. These can have further items added to them as appropriate and be updated.

in LECTURES IN A LIBRARY AND INFORMATION SCIENCE SCHOOL, participants should be made aware of where they can obtain a copy of the BIBLIOGRAPHY and the GLOSSARY for further study.

BACKGROUND READING

Instructors may wish to consult the following books for further information:-

Burton and Petrie. *The librarians guide to microcomputers for information management.* [12]

Corbin. *Implementing the automated library system.* [13]

Corbin. *Managing the library automation project.* [14]

Tedd. *An introduction to computerised library systems.* [15]

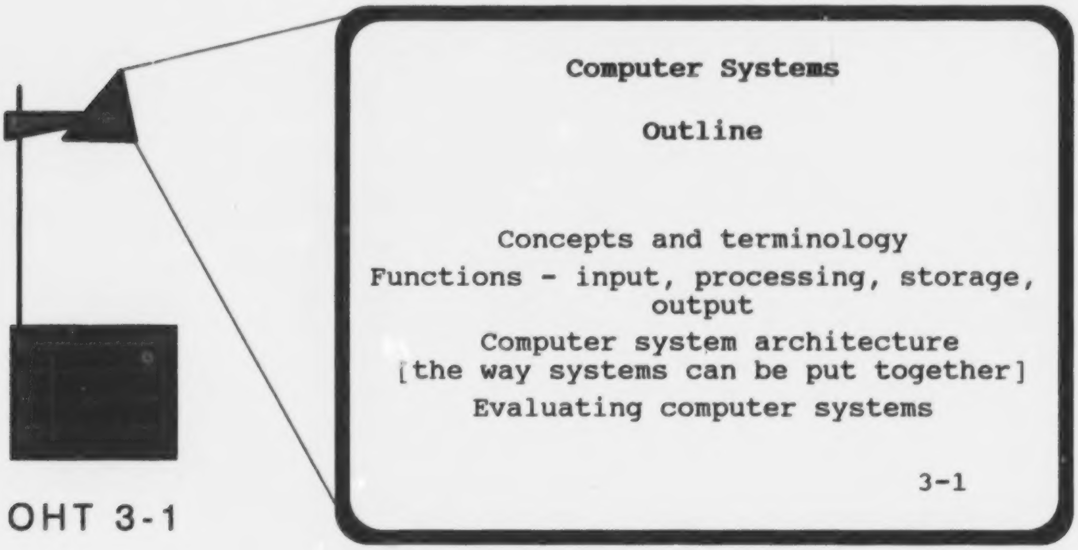
Williams. *Annual review of information science and technology.* [16]

TEACHING NOTES

The aim of this presentation is to give you some background knowledge of computer systems.

If other Modules in the Teaching Package are to be used

This will help you to understand the computer related sections in the other Modules we will be examining in this teaching programme.



Computer Systems

Outline

Concepts and terminology

Functions - input, processing, storage, output

Computer system architecture
[the way systems can be put together]

Evaluating computer systems

3-1

OHT 3-1

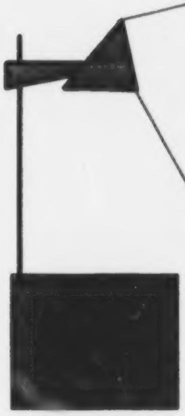
This presentation consists of four sections, shown on the Overhead transparency, and we shall be looking at each section in detail. Computer terminology will also be explained where appropriate. The computer terminology used is also available for future reference in a Glossary which is available...............
....
....

NOTE - Please indicate to students where they can obtain a copy of the GLOSSARY, which is included in Module 0 of this Teaching Package. It can be copied for individual students if funds permit, or a copy should be made available for student use in the library or the classroom.

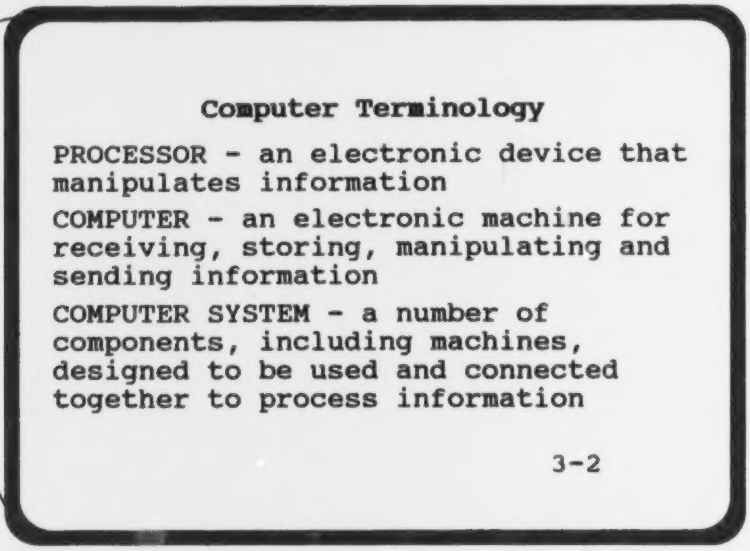
NOTE OHT 3-1 should be discussed only briefly as it shows the outline of the topics to be covered. There is no need to elaborate on each topic as these are covered in detail in succeeding OHTs.

OBJECTIVE 1. THE CONCEPTS AND BASIC TERMINOLOGY OF COMPUTER SYSTEMS

NOTE. These overheads cover some basic concepts which deserve definition at the start. The GLOSSARY will assist with learning further terminology. Instructors must be familiar with the Glossary in order to use terminology consistent with it. If the instructor prefers to use other terms, they should replace the definitions given in this Module and a Glossary of these variant terms should be prepared for student use.



OHT 3-2



Computer Terminology

PROCESSOR - an electronic device that manipulates information

COMPUTER - an electronic machine for receiving, storing, manipulating and sending information

COMPUTER SYSTEM - a number of components, including machines, designed to be used and connected together to process information

3-2

(NOTE Give the students time to read the definitions before elaborating upon them as required or inviting questions about them.)

The PROCESSOR. A PROCESSOR is not a complete computer in itself, but it IS the major component of a computer or a computer system. In human terms, it is the 'brain'.

A COMPUTER is designed to be used by one person at a time, normally. When using a computer for 'games' two or more people may play together.

OHT 3-2 continued on back...

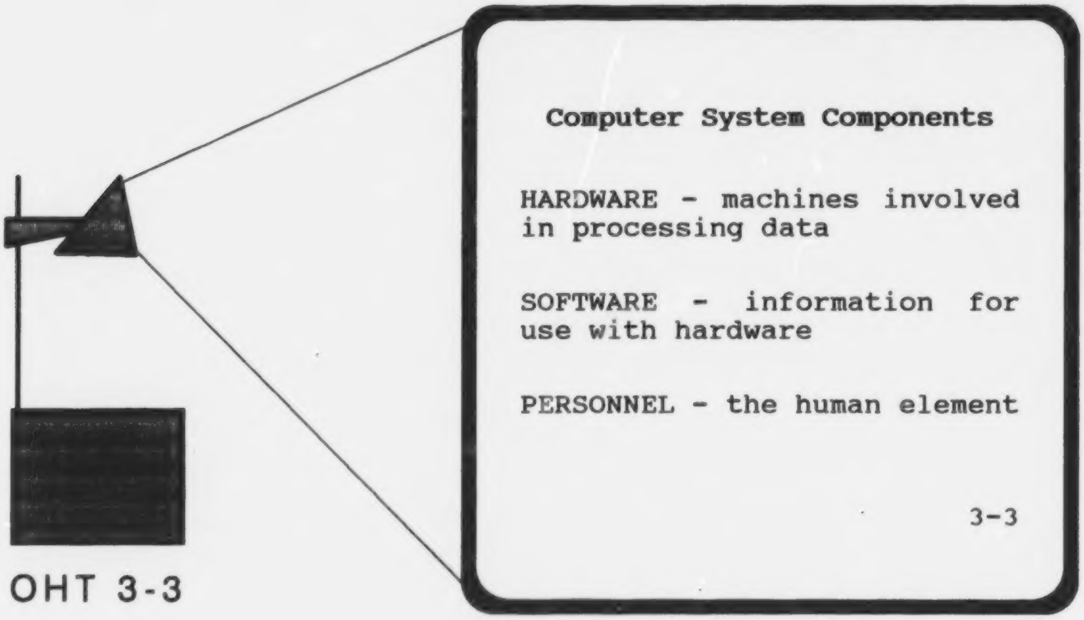
OHT 3-2 continued.

A COMPUTER SYSTEM, however, is designed to be used by several people at one time. Therefore it needs multiple components to enable it to be used simultaneously by several users.

The missing item from this list of terms is of course 'people'. A computer or a computer system is simply a machine. At present it cannot think for itself. Machines need people to design and run them.

A computer, like any other machine, will only work properly when the person using it knows how to operate it. You are probably familiar with the phrase "garbage in - garbage out'. This means that if the human is wrong, then the computer will also be wrong. The popular term 'Computer error' is almost invariably used by people trying to hide the fact that they, or someone else, made a mistake when using the computer.

Computer programs, which are sets of instructions to the computer, are available to enable people to use computers to carry out specific tasks. These must be effectively designed BY people and WITH PEOPLE, not machines in mind. A computer is rather like a sophisticated video cassette player - put the right programme in, know which are the right buttons to press and you will see the right programme.



Computer System Components

HARDWARE - machines involved in processing data

SOFTWARE - information for use with hardware

PERSONNEL - the human element

3-3

OHT 3-3

The parts that make up a computer system, that is its components, fall into three main groups.

The term 'HARDWARE' is used in computer technology, to mean the actual physical equipment used in a computer system. Thus any machinery which is involved in the processing of data is 'HARDWARE'. This term is also similarly used in the associated area of audiovisual technology.

'SOFTWARE' consists of information for use with hardware. This can be in two forms.

COMPUTER PROGRAMS are a series of instructions or statements written in a form acceptable to a computer. They are prepared in order to achieve a certain result from the computer.

OHT 3-3 continued on back.....

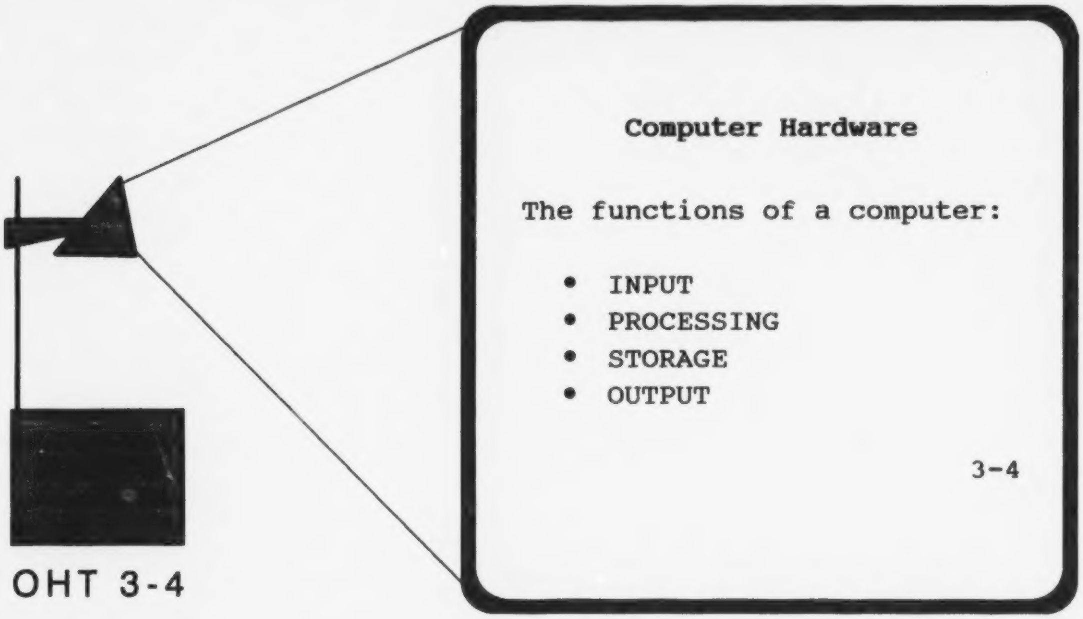
OHT 3-3 continued.

The second form of information the computer requires to make it carry out its work is DATA. This is defined in the GLOSSARY as a representation of facts, concepts or instructions in a form suitable for communication and interpretation by humans or machines.

Put simply, PROGRAMS tell the COMPUTER what to do with the DATA it receives.

We shall be looking later at COMPUTER SOFTWARE in greater detail. ***(SEE Module 4.)*** The term Software is also used in audiovisual technology to mean the programs themselves.

PERSONNEL, the human component in the system, covers all those who work with computer systems. These include supervisors, operators, analysts, programmers, technicians and last but by no means least, users.



Computer Hardware

The functions of a computer:

- INPUT
- PROCESSING
- STORAGE
- OUTPUT

3-4

OHT 3-4

These are the four major functions, or activities carried out by a computer or a computer system.

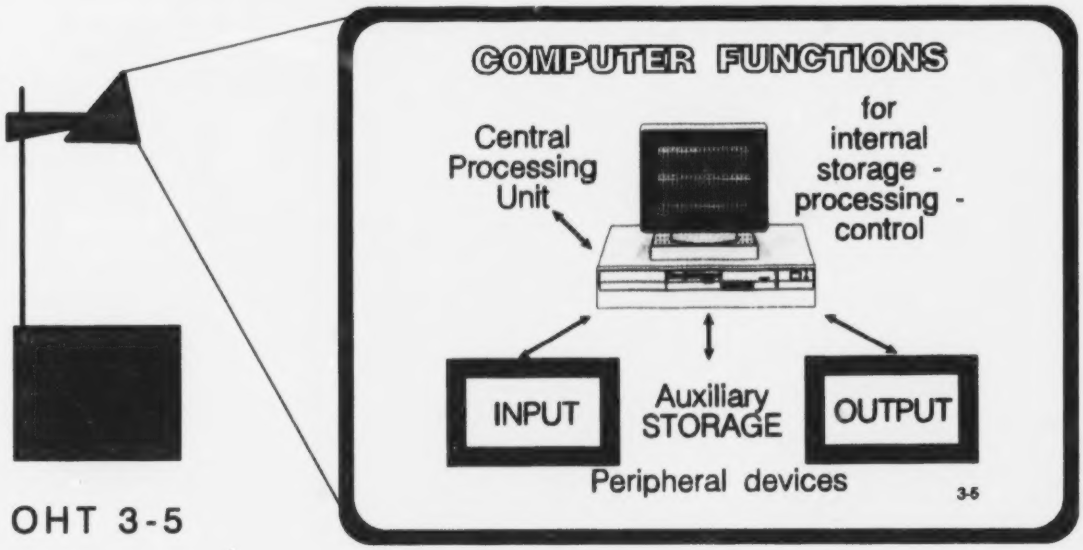
INPUT is any information which is put into or 'entered' into a computer. It includes programs and data, and commands or other instructions to the computer.

The PROCESSING or manipulation of information is carried out by the CENTRAL PROCESSING UNIT.

The information manipulated by the computer can be placed in STORAGE for current and future use.

The Computer can OUTPUT the manipulated information to the user when and how the user requires it.

OBJECTIVE 2. THE MAJOR FUNCTIONS OF COMPUTERS



COMPUTER FUNCTIONS

Central Processing Unit

for internal storage - processing - control

INPUT

Auxiliary STORAGE

OUTPUT

Peripheral devices

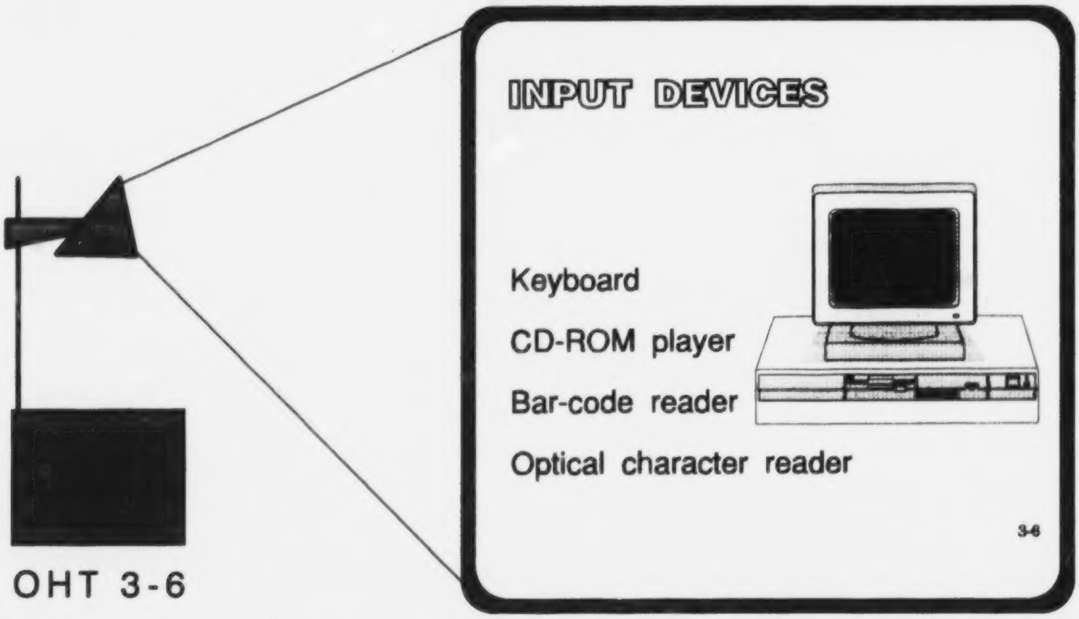
3-5

OHT 3-5

This overhead transparency shows the way in which the main functions of a computer are related to each other.

Note that arrows flow both ways between components. This shows that all the peripheral devices are under the control of the central processing unit and the software which is instructing it.

INPUT DEVICES



OHT 3-6

INPUT DEVICES

Keyboard

CD-ROM player

Bar-code reader

Optical character reader

3-6

Now we can examine these four functions in more detail.

First, INPUT DEVICES.

The overhead transparency lists four of the most important methods of entering or inputting information into a computer. The methods used are constantly undergoing change, as computer technology continues to improve.

NOTE. Instructors may wish to vary or update this list, depending upon the range of input devices used in information handling in their country.

For a computer can only process data after it has been entered or inputted. Systems analysts describing how a computer system will work sometimes forget to say how data is to get into the system.

OHT 3-6 continued...

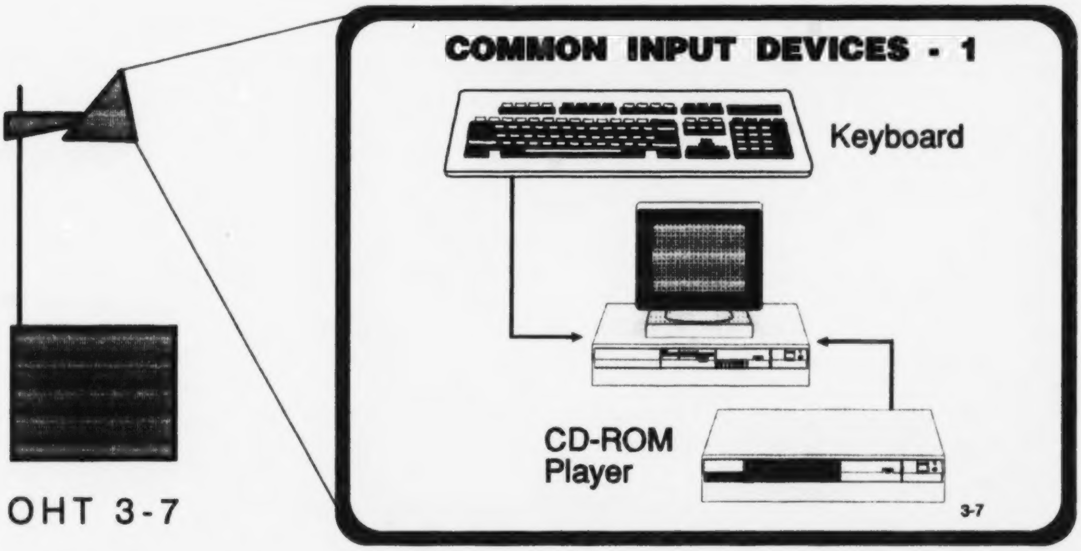
OHT 3-6 continued.

Inputting large amounts of data can take considerable periods of time and can be extremely boring for the operator. As operators are human, this can lead to disinterest and then inaccuracy.

Yet the importance of complete and accurate data being inputted cannot be overstressed. Bibliographic and other information agencies and services must supply accurate information.

It is partly because of the need for total accuracy and greater speed that other methods of inputting are developing.

As the keyboard is the method most open to human inaccuracy, error-checking routines have been developed to check the accuracy of input. But there is still a need to verify inputted data, for human error can permanently and adversely affect data.



OHT 3-7

A keyboard is still the most flexible device for inputting information into a computer.

When the keyboard is under the direct control of a working computer, it is known as an ONLINE keyboard. An example of an ONLINE keyboard and computer system is the airline computer you meet when you check in at the airport. It gives immediate information, without having to load in a special program about your flight.

The keyboard is flexible because it allows the operator to correct errors. It also permits the use of a number of labour saving and error-checking routines. But online keyboarding takes up time in the central processor, which means that the speed of performance in a multi-user system is slowed down.

OHT 3-7 continued on back..........

OHT 3-7 continued.

Although most computer keyboards use the same lettering layout as typewriters, there is a lack of standards for special characters and symbols, for example accents. This can cause an operator some problems when using different keyboards.

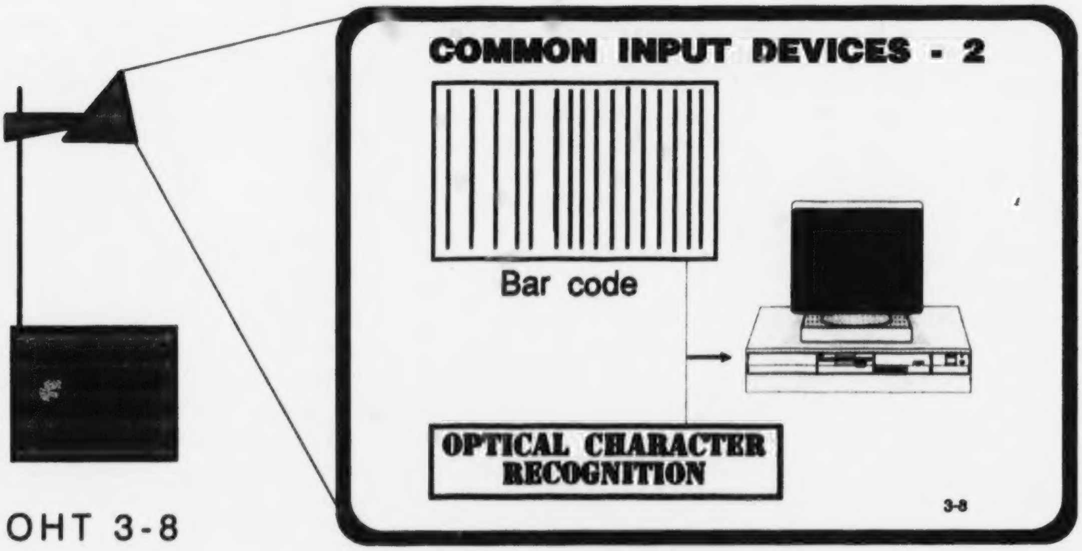
The speed of operation of a number of tasks carried out on a keyboard can now be improved by the use of additional devices. The first of these is called a MOUSE. This is a simple device that moves a pointer around the computer screen and enables simple commands to be sent to the computer. It normally works in conjunction with a keyboard. A JOYSTICK is rather like a mouse, but is used mainly when playing computer games.

An increasingly important input device is the CD-ROM player. This inputs information accurately from a 'Compact-disk Read Only Memory' - a development of the audio compact disk, itself a development from the optical disk. CD-ROM are used for storing huge amounts of text and picture information. [17] For example, the text content of a twenty volume encyclopaedia can be stored on one 12 centimetre CD-ROM.

CD-ROM players are not the same as the floppy or magnetic disk drives fitted into most computers. For floppy disk drives can both input information stored on magnetic disk and can record output from the computer onto magnetic disc.

NOTE - Instructors should amend the next two sentences appropriately when new developments take place in CD-ROM technology.

CD-ROM Players can only input information - information contained on a CD-ROM which has been produced by a major compact disc manufacturer. During the 1990's desktop CD-ROM Disk Drives are likely to be developed that will both input information from CD-ROM, and will record information from the computer onto CD-ROM.



COMMON INPUT DEVICES - 2

OHT 3-8

BAR CODE READERS for BAR CODE LABELS are especially useful where small amounts of data are concerned. Bar code labels most often represent numbers, though they can be used for letters as well. They can be prepared in advance, and can either be purchased or printed in-house. They can be re-used many times and this avoids the need to re-enter the same information each time on a keyboard. The data inputted each time is accurate. They are increasingly being used in circulation/issue systems in libraries and information centres - on periodicals - in supermarkets, and in other organisations.

OPTICAL CHARACTER READERS are being improved all the time, and a wide range of typefaces can now be read accurately. They are being used in a number of major information services for a variety of applications. One example is the Kurzweil computerised reading machine for blind users, which converts the text it reads into audible words. Other readers input large quantities of printed material into the computer quickly and accurately.

OHT 3-8 continued on back.....

OHT 3-8 continued.

Bar Code and Optical Character Readers are intermediate media which do not have to be used ONLINE. When used OFFLINE, the information they read can be stored for some time. It can then be fed into the computer as required and when convenient. However, if there are any errors in the printed data being read, error correction is somewhat more difficult.

There are of course, other methods of inputting information into the computer. Punched paper tape is less used now than in the past. Its production, like keyboarding, was open to error. Voice recognition, a means whereby the spoken work can be converted into digital code and inputted into a computer is under development.

Computerised data can also be exchanged with other organizations, provided compatible software and hardware is used

Many storage devices are often used as input devices as well, such as magnetic tape and disk drives, and the digital optical disk recording systems being developed.

The development of optical disk technology, of which CD-ROM is just a part, will lead to new and highly sophisticated input and storage devices for computers. They will give users access to vast quantities of data previously unheard of. For example, it has been suggested that it will soon be possible to record the entire contents of the Library of Congress on one hundred 30 centimetre (or 12 inches) digital optical disks.

OHT 3-9

The Processor

Constant qualities

- the computer's brain
- a manufactured 'black box'

Variable qualities

- speed of operation
- ability to handle peripherals
- internal storage
  - read only memory (ROM)
  - random access memory (RAM)

3-9

All computers and computer systems have qualities in common.

Firstly, the PROCESSOR is the core or brain of the computer system.

The model number of the processor is often the "name" by which the entire system is known. For example, the computer on which these overhead transparencies have been prepared has an Intel. 80286 processor. The computer is manufactured by a company called Viglen. Therefore it is known as a 'Vig. 2'. The model based on the Intel. 80386 processor is known as the 'Vig. 3'. Viglen and many other manufacturers make computers that are compatible with IBM's personal computers - they use the same type of central processor and their model numbers reflect the processor used.

The processor changes its functions according to which software is used. Any limitations the processor may have can normally only be overcome by replacement with a larger, faster processor. Unfortunately, doing so may render some software incompatible.

OHT 3-9 continued on back.......

OHT 3-9 continued.

However, there are qualities that vary significantly from one manufacturer's system to another. These may include the speed of operation of the computer, and its ability to handle various other components. For example, input and output devices, and external storage devices. Another variable may be the amount of ROM, and what utilities are supplied with it. Such utilities will include sorting and editing abilities and programming languages. The amount of RAM available for software and data may also vary.

Remember that it is important that the computer systems expert understands how the processor works. But the information professional can and should be a sophisticated computer user without necessarily understanding how the processor works. One does not need to know in detail how a motor car engine works to be able to drive a car efficiently.

OHT 3-10

Storage

INTERNAL
- volatile memory

EXTERNAL
- magnetic
- re-usable
- compact, cheap
- problems of standards

NEW DEVELOPMENTS
- laser discs
- digital paper

3-10

There are various ways in which data can be STORED within or by the computer. It can be stored internally. Data is manipulated, for example, by entering or editing it with an online keyboard. During manipulation it is stored within the computer for a short period only, in what is known as volatile memory. If the computer is deliberately turned off or accidentally switched off because of a power cut for example, the data in volatile memory is lost and cannot be retrieved.

The amount of storage room available within the processor for data and programs in active use is limited. However, internal storage capacities are increasing as technology improves.

OHT 3-10 continued on back ....

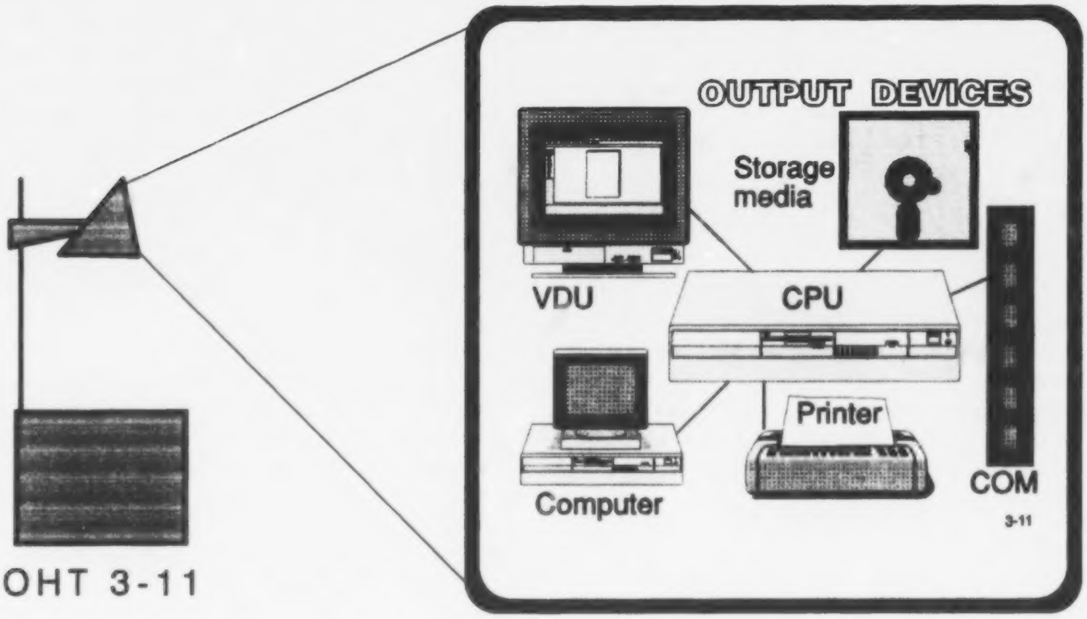
OHT 3-10 continued.

To store data and program materials 'permanently', the computer transfers it to auxiliary or EXTERNAL STORAGE devices. However, as yet none of the storage media used in external storage devices are permanent in the true sense of the word. They can be accidentally erased or damaged, or the data may be lost over a long period of time. No doubt truly permanent storage media will become a reality in the near future.

External storage devices normally use magnetic disks, often called floppy disks, or tapes. These are similar to the magnetic tapes used in audio and video recording, and can be erased and re-used. Data storage on magnetic disks or tape is very inexpensive and compact. But the choice of storage medium dictates the time taken to retrieve an item. Generally disks are faster to use than tape. An item recorded on disk can be found almost immediately. But information is recorded sequentially on tape and it may take some time to wind the tape to the point where the item is located.

Unfortunately, standards for the storage of data on magnetic media are usually established by individual manufacturers. New, less expensive, and more efficient media are constantly appearing, making today's cost and space estimates obsolete. And yesterdays equipment, too!

Recent developments of optical disks, CD-ROM and digital paper provide data storage for huge quantities of data at potentially very low prices.



OHT 3-11

So far we have seen how data is inputted into a computer, what the processor is and does, and how the computer can store the information it produces. Now we will examine how the user can see that information.

Virtually all computers used in information handling, initially OUTPUT their information to a display unit. These are known as VDUs, or visual display units. They can display visual pictures of the computer output, be it text or pictures or both, in monochrome or colour. VDUs are a special form of a television set known as a video monitor, and are similar to the display units used in video games machines. But the picture on the VDU is volatile, like the processor's memory. So output devices that can record a permanent image are also required.

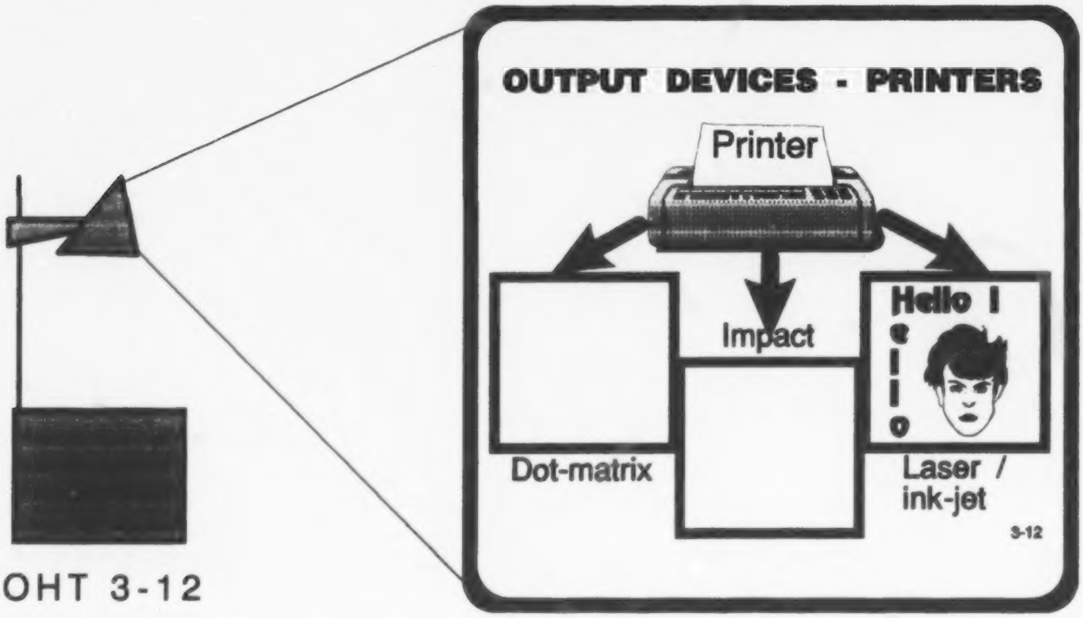
OHT 3-11 continued on back.....

OHT 3-11 continued.

Microfilm can be produced directly from magnetic storage media, without an intermediate printed stage. This is known as Computer Output Microfilm, or COM.

Video printers already exist and are being improved. These can produce a black and white or colour copy on paper of an image on a video screen. It may shortly be possible to transmit information on the VDU directly to a digital black and white or colour photocopier, which will then produce a paper copy.

A computer can also output stored data in a form which is not suitable for use either by humans or itself. For this data is intended to be used only by another computer, when outputted information is transferred to it.



OUTPUT DEVICES - PRINTERS

Printer

Impact

Dot-matrix

Hello
e
l
l
o

Hello

Laser / ink-jet

3-12

OHT 3-12

The most common form of output device which produces a permanent record is the printer. There is an increasing range of printers using different techniques. Quality and speed of operation vary.

The most common types in use today include dot matrix, impact, ink-jet and laser printers. Examples of the output of some of these printers are shown on the overhead transparency.

DOT MATRIX PRINTERS produced text or pictures made up of small dots. They are very fast and can print text and pictures at the same time. The quality is not yet as good as the other types of printer. It can be somewhat improved by photocopying the original on a good photocopier.

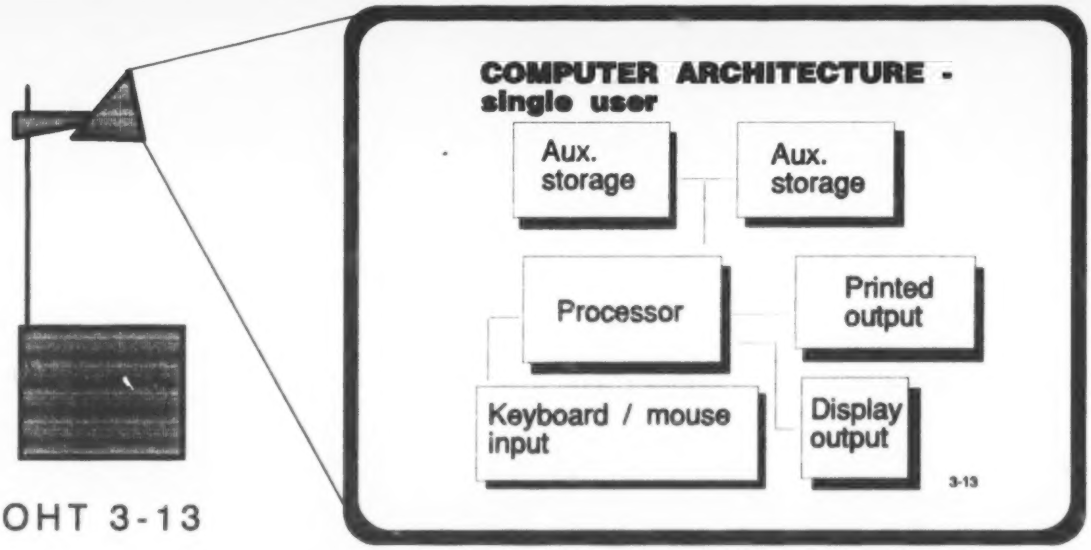
OHT 3-12 continued on back..........

OHT 3-12 continued.

IMPACT PRINTERS produce electric typewriter or book quality work, but can only produce text. Basically they are electric typewriters without a keyboard, and often use interchangeable 'daisywheel' typefaces. They are comparatively slow in operation.

INK-JET AND LASER PRINTERS also use dots in the make up of the images they produce, but they are so tiny that the quality of the image is similar to that of impact printers. They can also produce high quality pictures and text together. Ink-jet printers tend to be slower in use and less flexible than a laser printer, but both produce a high quality image. The originals of the overhead transparencies we are using were produced on an ink-jet printer.

OBJECTIVE 3. COMMON WAYS OF CONFIGURING COMPUTER COMPONENTS



COMPUTER ARCHITECTURE - single user

Aux. storage
Aux. storage
Processor
Printed output
Keyboard / mouse input
Display output
3-13

OHT 3-13

The next two overhead transparencies show how the components of typical computers and computer systems are attached together. This is known as the computer architecture.

There are three forms of computers currently available for use in information handling. The first is the Mainframe Computer, which can support more than 80 users working at one time, through 80 or more terminals connected to it. A terminal consists of a keyboard and a visual display unit.

The second form is a Minicomputer, which can have between 4 and 80 terminals connected to it.

OHT 3-13 continued over...

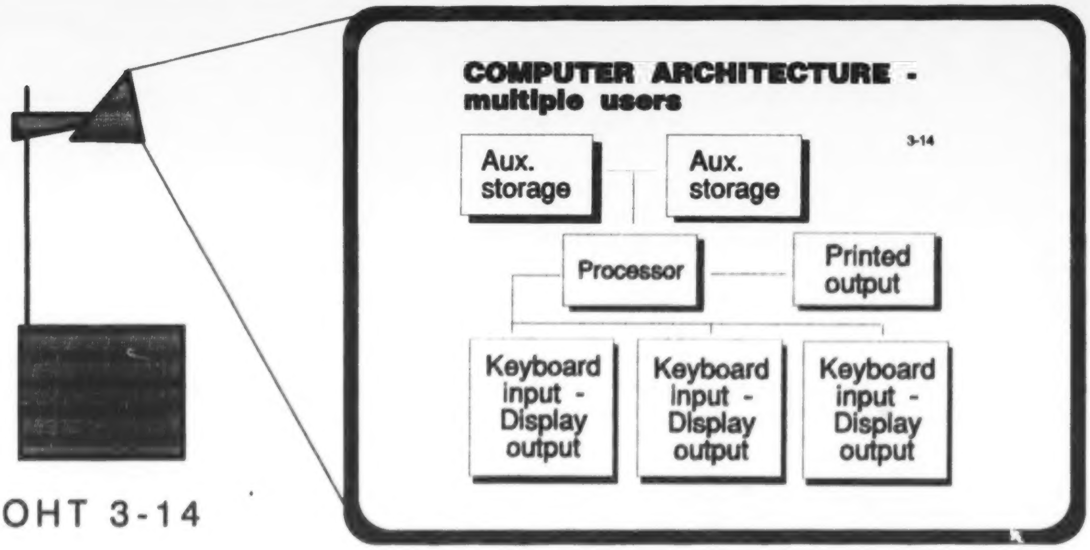
OHT 3-13 continued.

A Microcomputer is usually used as a complete system in itself - many people have a Microcomputer in their homes or offices. Such a self contained unit is known as a 'stand alone' system.

However, a microcomputer can have between one and four terminals connected to it.

Distinctions between these three forms are becoming increasingly blurred as technology improves.

This transparency shows a single-user system, for example a typical microcomputer. While the blocks show concepts, they also represent one possible method of connecting the physical components together. But there are other methods.



COMPUTER ARCHITECTURE - multiple users

3-14

Aux. storage

Aux. storage

Processor

Printed output

Keyboard input - Display output

Keyboard input - Display output

Keyboard input - Display output

OHT 3-14

This overhead transparency shows one possible multi-user environment. Several people can use the computer system at the same time to carry out different tasks.

The number of people who may wish to work simultaneously is a critical factor in the choice of a small, medium or large system.

OHT 3-14 continued...

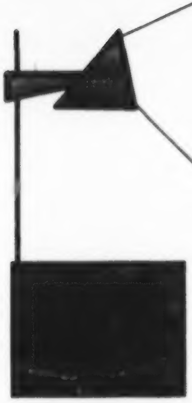
OHT 3-14 continued.

It could be a medium sized system based on a minicomputer suitable for a library and information science school where thirty or so users could work on it at the same time. Or it may be a large system based on a mainframe computer such as that used in a major airline or a national banking service. Such a system would have keyboards and VDU's in many branches or service points. The various components may be separated by metres, kilometres or continents. They can be interconnected by telecommunications systems, either through wire or optical cables, or satellite links.

NOTE. The instructor may wish to expand upon wire, optical fibres and satellite links to aid comprehension.

Generally users will not normally be aware of one another, beyond the fact that the response time of the computer system to their instructions may be slowed down.

OBJECTIVE 4. GUIDELINES FOR EVALUATING COMPUTER SYSTEMS



OHT 3-15

Computer Criteria For Information Handling - 1

Keyboard
- location
- keys
- characters
- size / colour / noise / feel

Display unit
- location
- size
- colour
- definition / flicker / glare

3-15

The overhead transparencies in this final section are guides to what to look for when selecting suitable equipment for information handling.

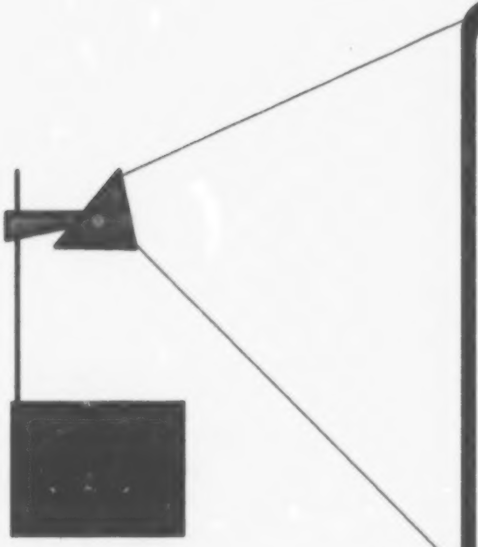
This transparency lists the points to look for when considering input and output devices. Their design is important because they provide the human interface with the computer system.

Is the keyboard separate from the computer and easy to move around? Can any switches on it be reached easily? Does it have a complete range of keys and are they properly located for use by a competent typist? What characters are produced by the keys and do they meet the users language requirements easily? Is it well constructed, attractive to look at, quiet in use? Does it feel positive when the keys are depressed?

OHT 3-15 continued on back..

OHT 3-15 continued.

Is the VDU a separate unit? Is it adjustable both for location and angle of the screen? Is it a suitable size and colour for continuous use by a user? Is the definition sharp, flicker and glare free?



OHT 3-16

Computer Criteria For Information Handling - 2

Processor
- RAM - how much?
- ability to handle printer
- expansion slots
- 'standard' software

Auxiliary storage units
- amount of information
- speed
- noise
- follows 'standards'

3-16

This last transparency points out that processors have certain measurable capabilities. These will be included in the specifications of the computer system. The user must establish his requirements and compare them with these specifications. The chosen system must be able to meet or exceed the users requirements.

Twice on the transparency the word 'standard' appears in quotes, for in reality there is a lack of real standards in this field.

Does the processor have enough Random Access Memory, that is the volatile memory, to run the programs and handle the data the user requires. Does it allow for developments in the near future? Can the computer handle the ideal printer for the job, or use the printers the organisation already possesses?

OHT 3-16 continued on back......

OHT 3-16 continued.

Are there expansion slots to attach any additional hardware that might be required or might be developed to upgrade the capabilities of the computer? Can the processor use generally available computer software? Many programs are designed to be used on many different manufacturers computers. An example of this is the range of IBM compatible computers which all should be able to use the same programs.

How much information will the auxiliary storage units hold? How fast do they record and playback data? Are they quiet? Will they read information from older 'standard' discs, for example, so that the users previous software is not rendered obsolete.

Thus a basic knowledge of the computer and its various components is an asset to any information worker. It helps them to understand the theory and practice of information handling. More particularly, it provides the background knowledge necessary to develop computer use skills - important today, and absolutely essential for the future.

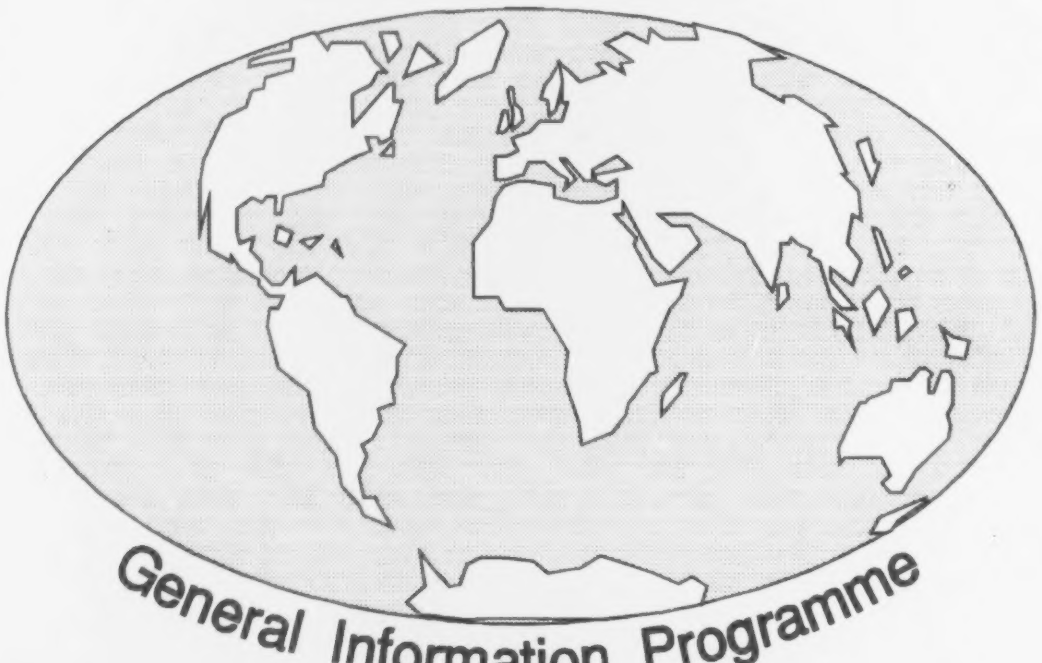
PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 3

Overhead transparency master copies

Photocopy onto plastic sheets approved by the Photocopier Manufacturer ONLY. Copies should be the same size as the originals, with at least a one centimetre margin all round.



COMPUTER SYSTEMS

OUTLINE:

Concepts and terminology

Functions - input, processing, storage, output

Computer system architecture (the way systems can be put together)

Evaluating computer systems

COMPUTER TERMINOLOGY

PROCESSOR - An electronic device that manipulates information

COMPUTER - An electronic machine for receiving, storing, manipulating and sending information

COMPUTER SYSTEM - A number of components, including machines, designed to be used and connected together to process information

COMPUTER SYSTEM COMPONENTS

HARDWARE

- Machines involved in processing data

SOFTWARE

- Information for use with hardware

PERSONNEL

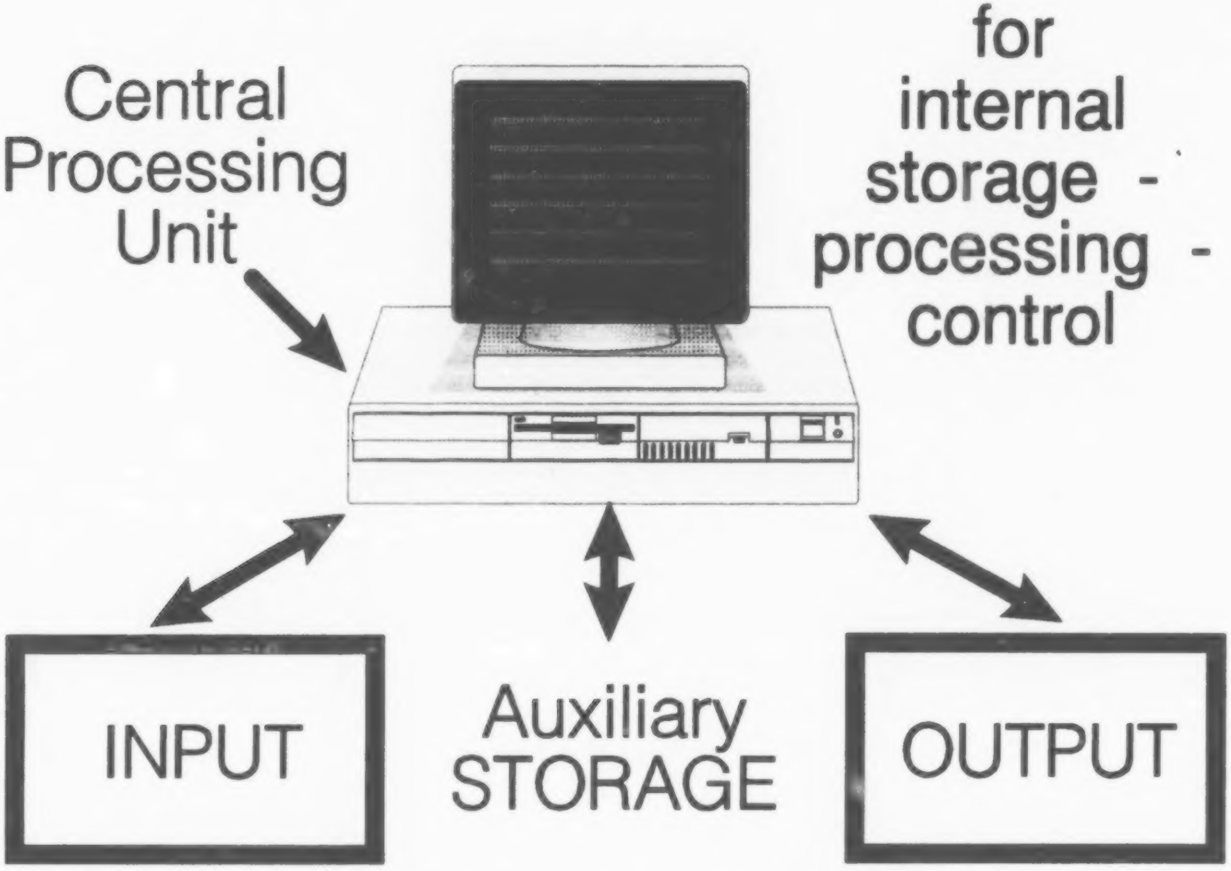
- The human element

COMPUTER HARDWARE

The functions of a computer

- INPUT
- PROCESSING
- STORAGE
- OUTPUT

COMPUTER FUNCTIONS



Central Processing Unit

for internal storage - processing - control

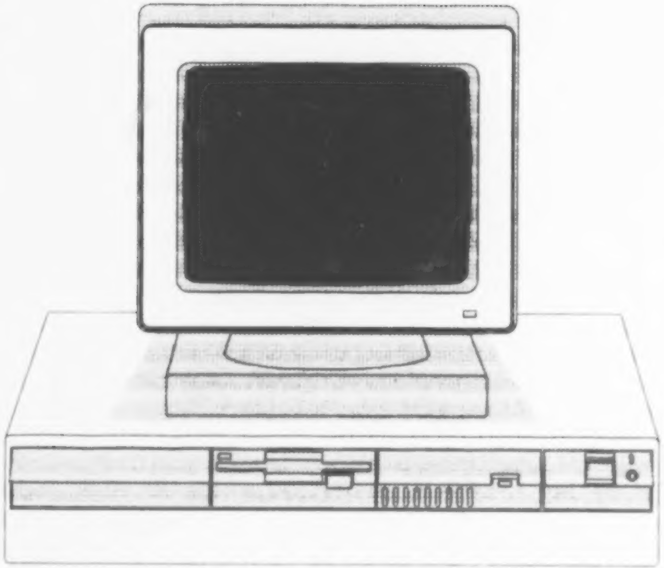
INPUT

Auxiliary STORAGE

OUTPUT

Peripheral devices

INPUT DEVICES



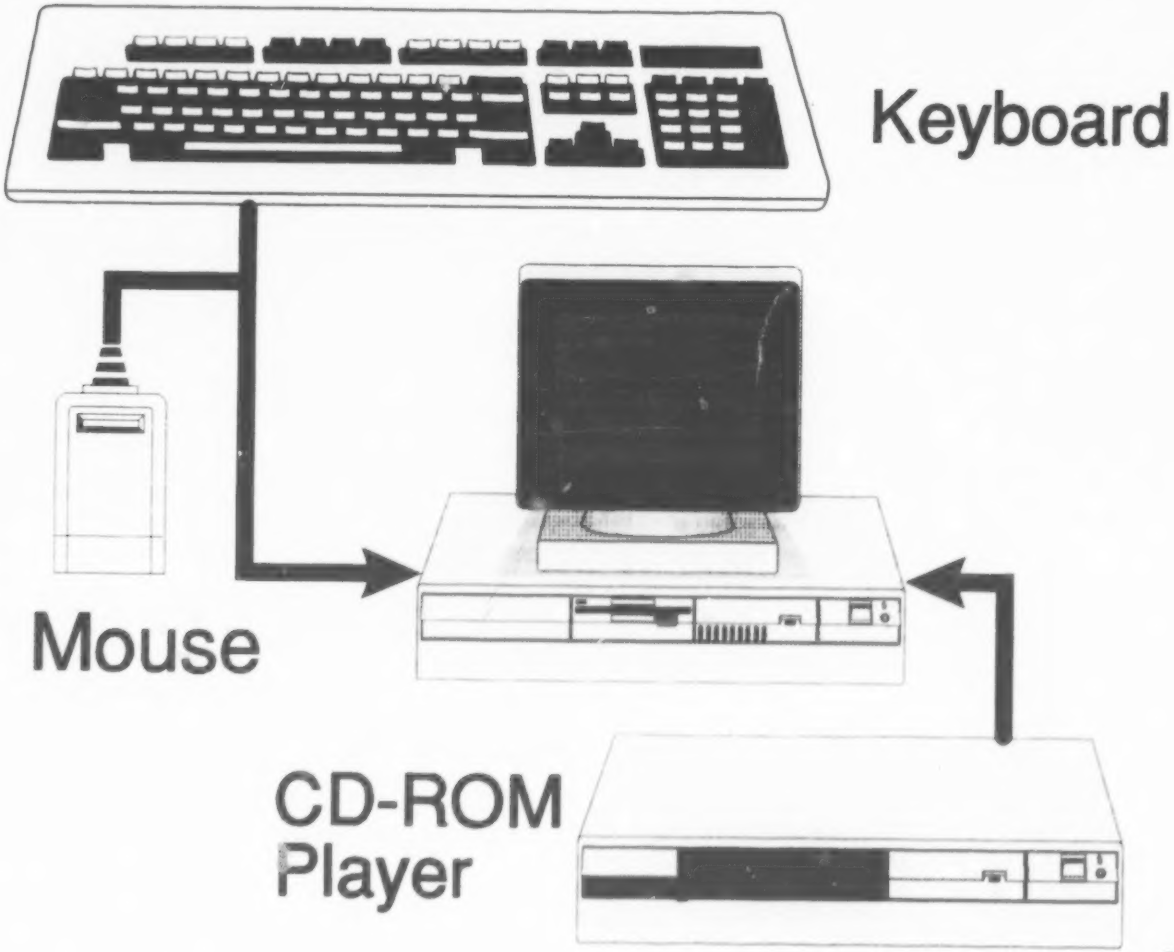
Keyboard

CD-ROM player

Bar-code reader

Optical character reader

COMMON INPUT DEVICES - 1

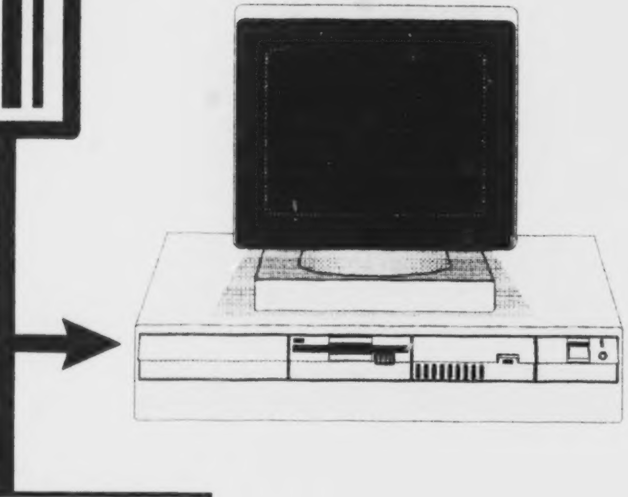


Keyboard

Mouse

CD-ROM
Player

COMMON INPUT DEVICES - 2



Bar code

OPTICAL CHARACTER RECOGNITION

THE PROCESSOR

Constant qualities
- The Computer's brain
- A manufactured 'black box'

Variable qualities
- Speed of operation
- Ability to handle peripherals
- Internal storage
    - Read only memory (ROM)
    - Random access memory (RAM)

STORAGE

INTERNAL

- volatile memory

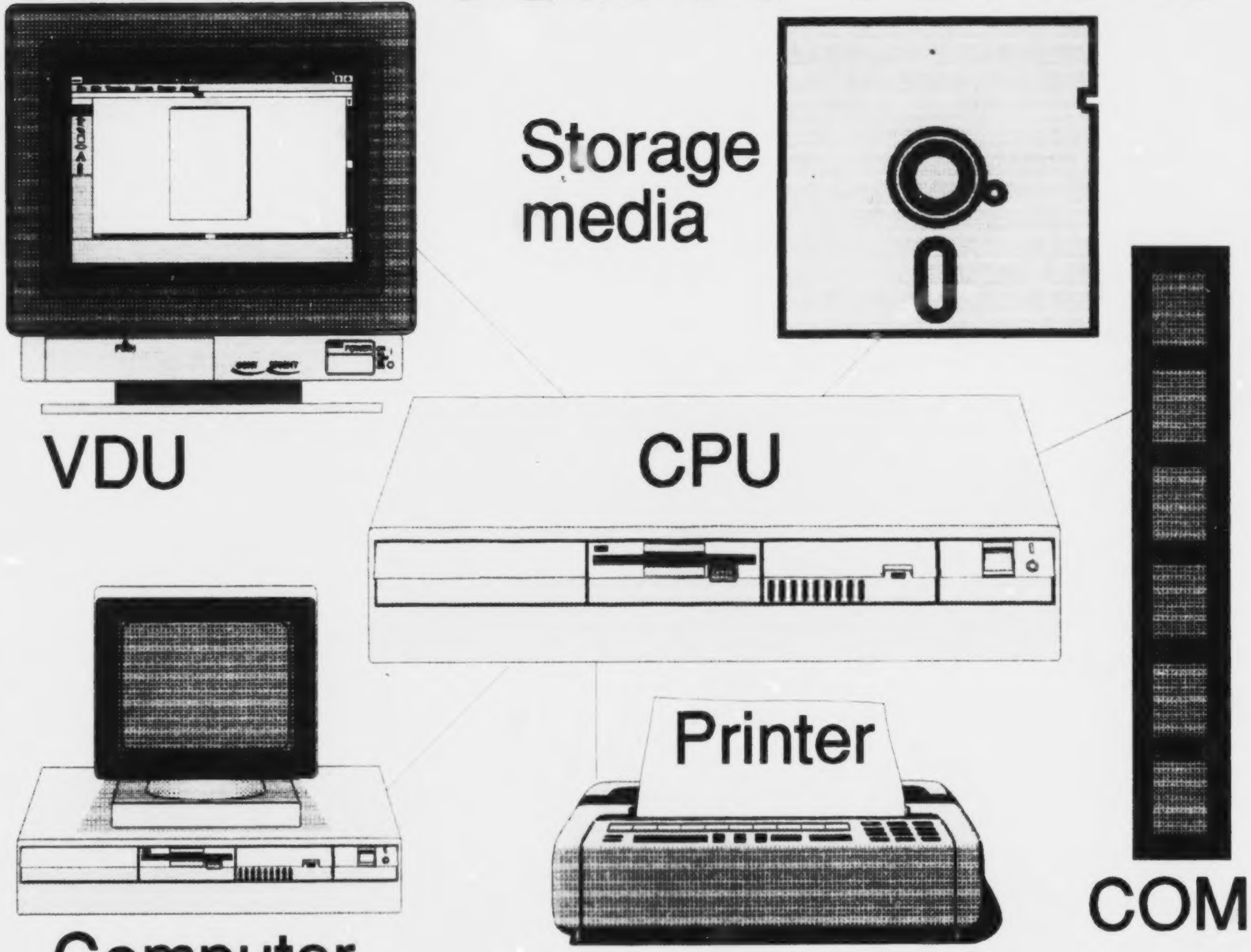
EXTERNAL

- magnetic
- re-usable
- compact, cheap
- problem of standards

NEW DEVELOPMENTS

- laser disks
- digital paper

OUTPUT DEVICES



Storage media

VDU

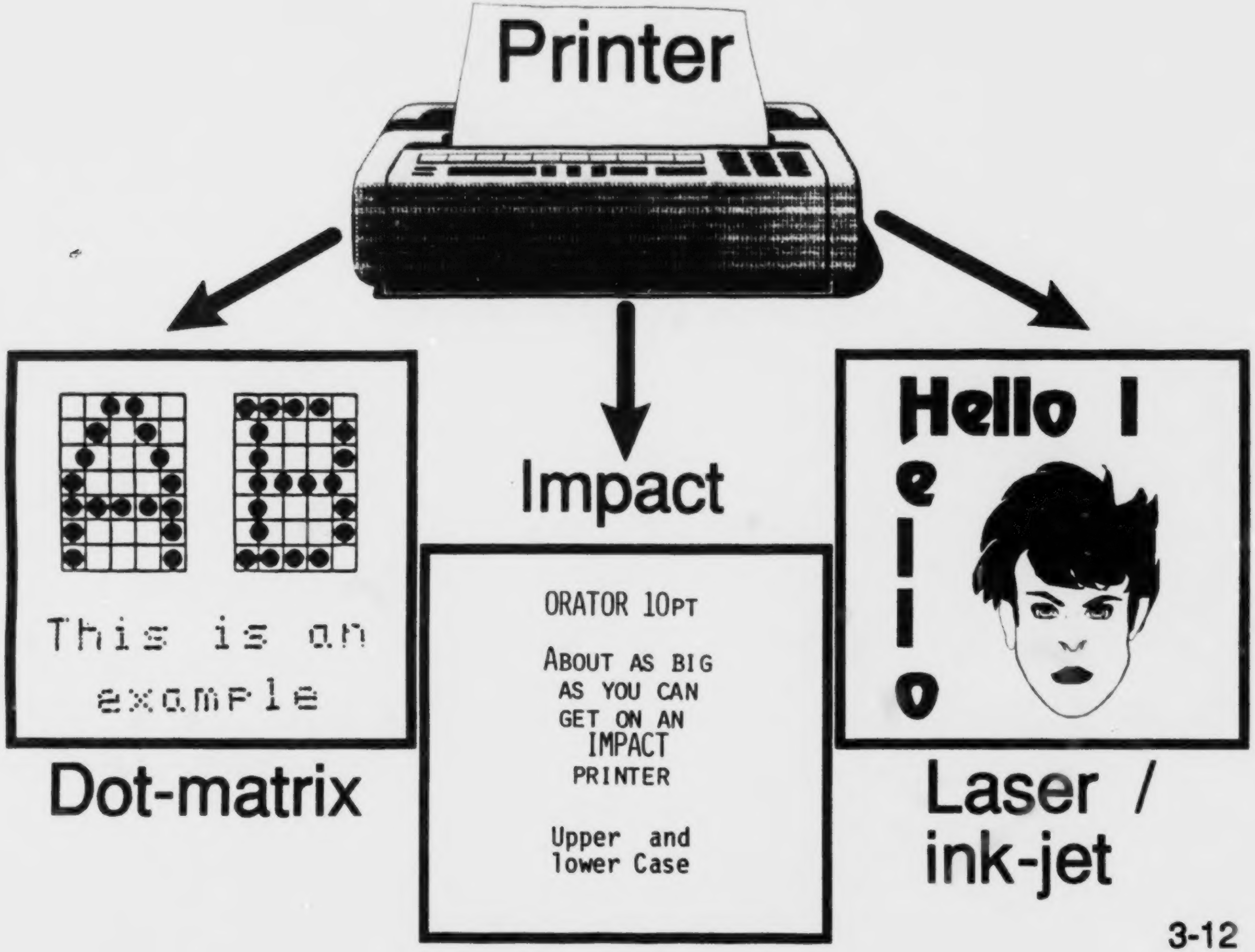
CPU

COM

Printer

Computer

OUTPUT DEVICES - PRINTERS



This is an example

Dot-matrix

Impact

ORATOR 10PT

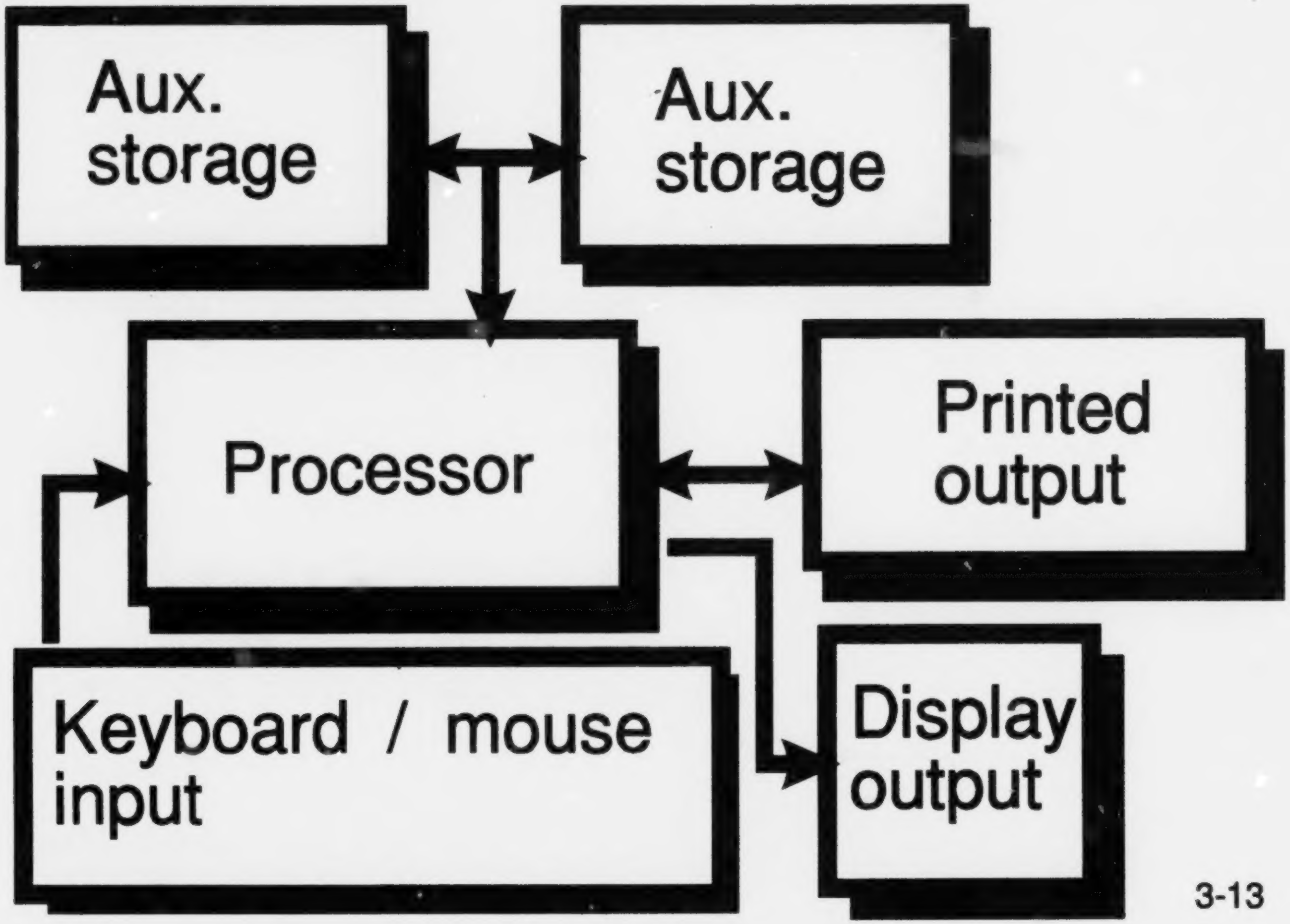
ABOUT AS BIG
AS YOU CAN
GET ON AN
IMPACT
PRINTER

Upper and
lower Case

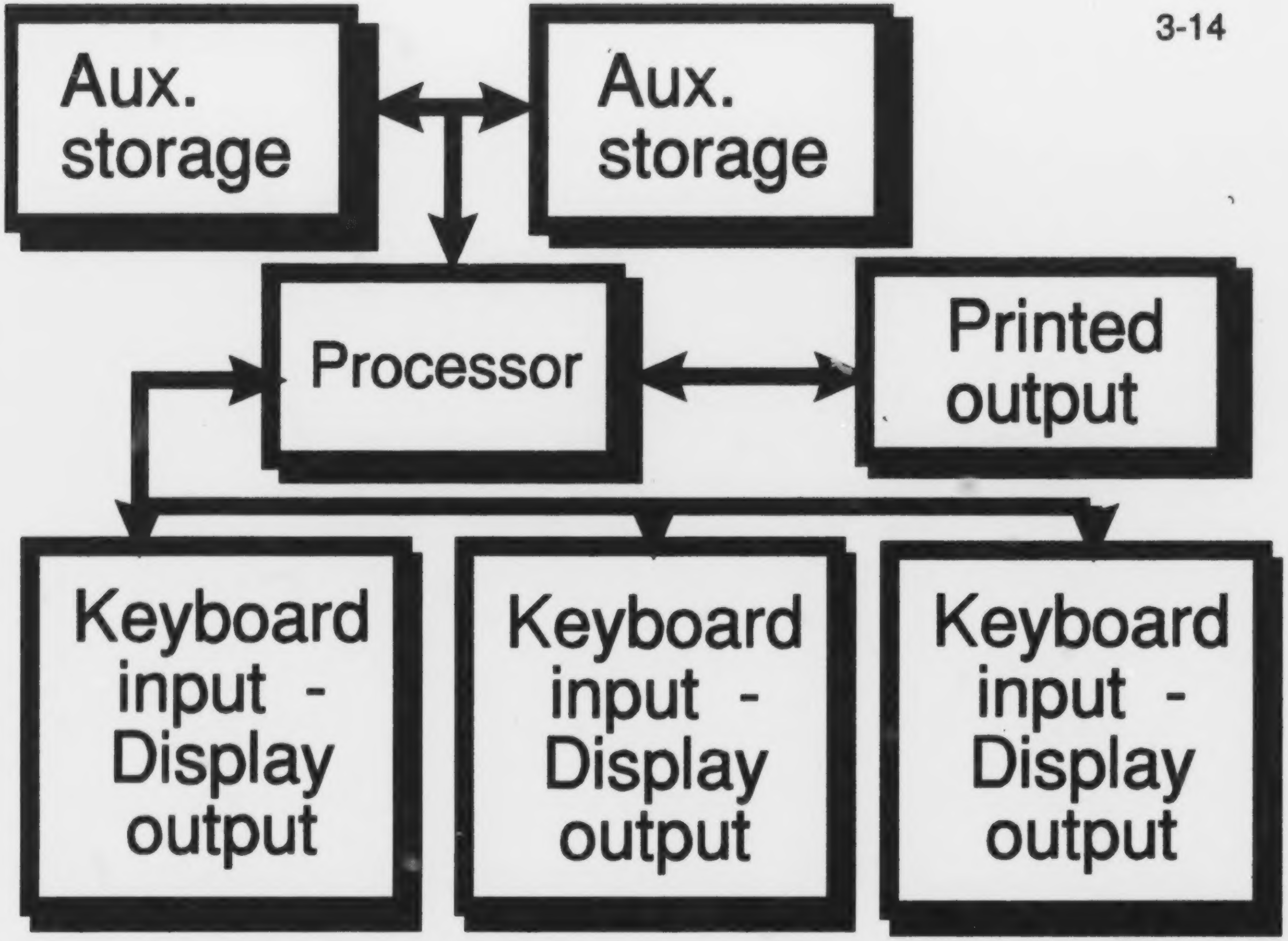
Hello I
e
l
l
o

Laser /
ink-jet

COMPUTER ARCHITECTURE - single user


Aux. storage
Aux. storage
Processor
Printed output
Keyboard / mouse input
Display output

COMPUTER ARCHITECTURE - multiple users



Aux. storage

Aux. storage

Processor

Printed output

Keyboard input - Display output

Keyboard input - Display output

Keyboard input - Display output

COMPUTER CRITERIA FOR INFORMATION HANDLING (1)

Keyboard

- location
- keys
- characters
- size/colour/noise/feel

Display unit

- location
- size
- colour
- definition/flicker/glare

COMPUTER CRITERIA FOR INFORMATION HANDLING (2)

Processor

- RAM - how much?
- Ability to handle Printer
- Expansion slots
- 'Standard' software

Auxiliary storage units

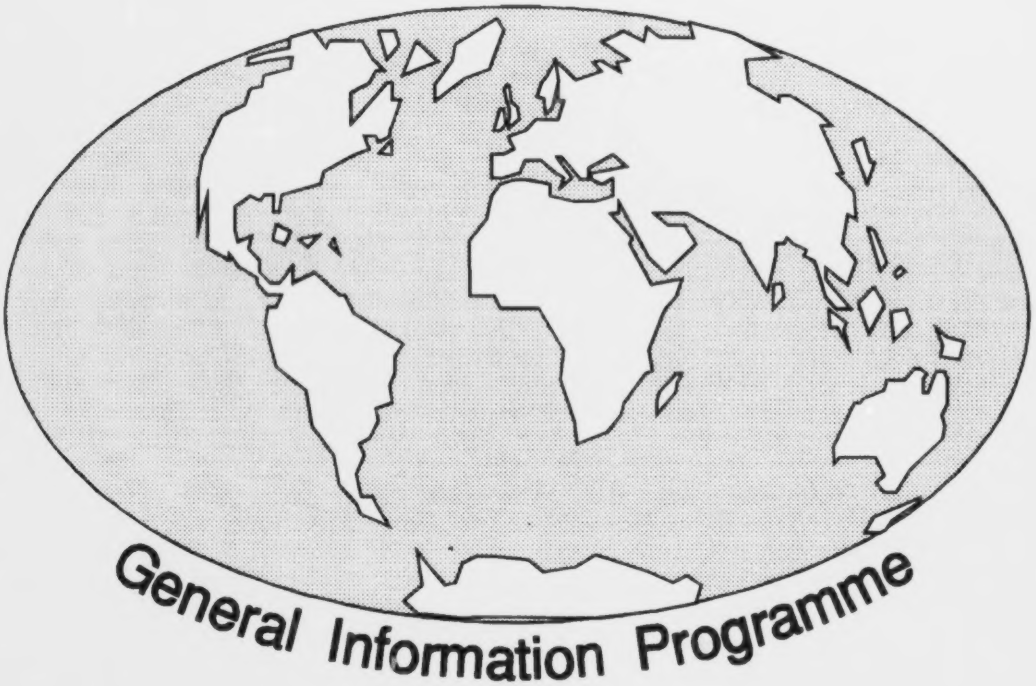
- Amount of information
- Speed
- Noise
- Follows 'standards'

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package
on
Standardisation in Information Handling

Module 4

Computer software


General Information Programme

INSTRUCTORS

PLEASE read **Module 0 - General Introduction to the Teaching Package,** before using this Module. It contains recommendations on how to use the Programme most effectively.

MODULE 0 also contains:

* A list of **ACRONYMS** giving the full titles of organisations referred to in this Teaching Package.

* A **BIBLIOGRAPHY** of documents referred to. These are followed by a [number] in the Module - full details are given in numerical order in the Bibliography.

* **ADDRESSES** of some major organisations denoted by a [letter] in the Module, are listed at the end of the BIBLIOGRAPHY.

* A **GLOSSARY** of computing terminology.

INTRODUCTION TO MODULE 4

This Module should follow immediately after Module 3. It is essential in that it gives THOSE STUDENTS WITH LITTLE OR NO PREVIOUS EXPERIENCE OF COMPUTERS the necessary background information to enable them to understand much of the material in the following modules. It consists of three sections relating to computer software.

It could also be used as AN INTRODUCTION TO COMPUTER SOFTWARE FOR NEW UNDERGRADUATE AND POSTGRADUATE STUDENTS.

With additional materials, it could also act as overview/review material for those who have already had some experience with computers, if this were required.

However, this Module does not set out to be a comprehensive course on the use of computer software by libraries and information services. While it contains useful structured material that could be included in such a course, an instructor would have to expand this and use additional information on a variety of topics. These would include time sharing and related topics; database management systems; programming languages; software issues such as selection, performance measurement, and the development of commercial and in-house packages; and common software packages for information such as CDS/ISIS, and MINISIS.

TIMING

AS A LECTURE

Given as it stands, this Module will last approximately 40 minutes. If the questions posed in the lecture are discussed by the participants during the session as recommended, then it will last approximately 50 - 60 minutes.

Introduction continued on back....

Introduction to Module 4 continued.

AS A SEMINAR

This Module, including the demonstration of various types of software programs, should last for approximately 2 hours.

AIM

To familiarise participants with computer software.

OBJECTIVES

This module is designed to show:-

1. The major categories of computer software
2. The way interactive programs appear to the user and the types of responses that may be required
3. Guidelines for evaluating computer software.

IT IS RECOMMENDED THAT,

wherever possible, the Instructor has a MICROCOMPUTER and examples of RELEVANT COMPUTER PROGRAMS in the teaching area on which matters raised in this Module can be demonstrated. While it may not be necessary to have the microcomputer working during the lecture session, it would be essential to have it working during a seminar session when more time could be devoted to demonstrating the various features. It is critical that Instructors should have familiarised themselves with the operation of the various programmes beforehand and can demonstrate them competently.

In seminars and short courses Instructors should give a copy of the BIBLIOGRAPHY and the GLOSSARY in MODULE 0 to all participants. These can have further items added to them as appropriate. IN LECTURES IN A LIBRARY AND INFORMATION SCIENCE SCHOOL, participants should be made aware of where they can obtain a copies of these documents for further study.

METHODS OF PRESENTATION

The Teaching Notes which follow can be used in two ways. EITHER the Instructor can read them aloud, whilst projecting the accompanying OVERHEAD TRANSPARENCIES. OR they can form the basis of the Instructor's own presentation to which additional materials and overhead transparencies can be added where appropriate.

Type in **Bold** or *Italic* is for the information of the Instructor only and should not be read aloud.

BACKGROUND READING

Instructors may wish to consult the following books for further information:-

Burton and Petrie. *The librarians guide to microcomputers...*[12]

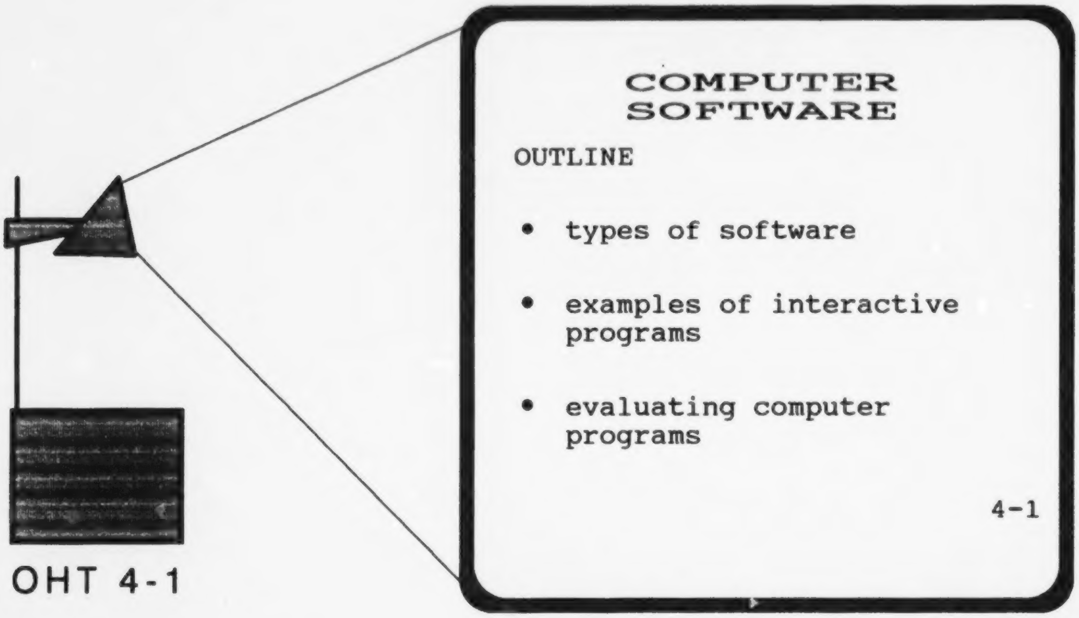
Corbin. *Implementing the automated library system.* [13]

Corbin. *Managing the library automation project.* [14]

Tedd. *An introduction to computerised library systems.* [15]

Williams. *Annual review of inf. sci. and technology.* [16]

TEACHING NOTES



COMPUTER
SOFTWARE

OUTLINE

- types of software
- examples of interactive programs
- evaluating computer programs

4-1

OHT 4-1

The aim of this Module is to give you some background knowledge about computer software. Software is either a file of information, or data, or is a program. A program is a series of instructions or statements, in a form acceptable to a computer, prepared in order to achieve a certain result. Once inputted into the computer, the program tells the computer what to do.

Use only if applicable

This session will help you to understand computer related areas in a number of the modules we will be covering in this teaching programme.

This overhead transparency lists the three major topics we will be examining in this session. We will look first at the types of software that exist.

Then we will examine some interactive programs. These are programs which, in effect, carry on a conversation with the human at the controls. Such programs provide instructions, ask you to respond to questions and instructions, and point out errors.

OHT 4-1 continued on back...

OHT 4-1 continued.

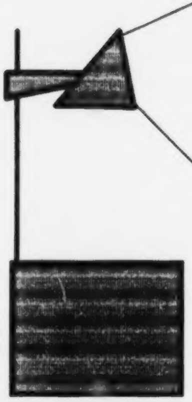
Thirdly we will examine the criteria for evaluating computer programs.

Terminology will be given as necessary, but you are reminded that you can check on computer terminology in the Glossary which was brought to your attention in the session on Computer Hardware. A copy of the Glossary can be found in ....

....

NOTE - Please inform the participants where they can obtain a copy of the GLOSSARY, to be found in MODULE 0.

OBJECTIVE 1. THE MAJOR CATEGORIES OF COMPUTER SOFTWARE



OHT 4-2

COMPUTER SOFTWARE

Three types of software:

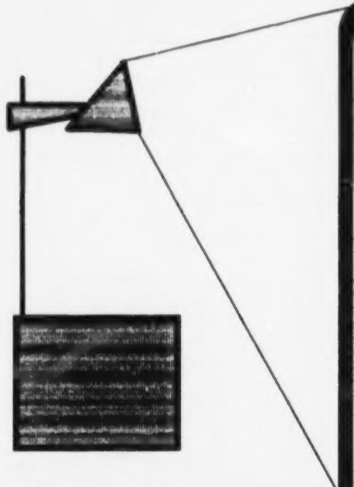
- operating systems
- applications programs
- data

4-2

Computer software is usually considered to be divided into two major types. These are known as OPERATING SYSTEMS and APPLICATIONS PROGRAMS, and we will look further at these in a moment.

However it must be remembered that there is a third type which is no less important. This is the DATA itself. Data is a representation of facts, concepts, or instructions in a form suitable for communication and interpretation by humans and machines.

Both data and programs must be inputted into the computer and be stored in identical ways for processing and manipulation.



OHT 4-3

OPERATING SYSTEMS

- provided for specific processors
- provided by manufacturer
- cannot be changed by user
- dictates features of all applications programs used with it
- stored in ROM and / or on disk (DOS)

4-3

The OPERATING SYSTEM is a special internal program that manages or controls the entire computer system. The operating system is provided by the manufacturer of the computer when it is purchased. The operating system cannot be changed by the user.

Not all computers use the same operating systems and thus they may not be compatible. There is a developing trend for different manufacturers of computers to use the same operating systems, however.

An example of this is the range of IBM and IBM Compatible Personal Computers. While IBM Computers are manufactured only by IBM, many other manufacturers now make computers which are compatible with IBM machines. These use the same standards and operating systems.

OHT 4-3 continued on back...

OHT 4-3 Continued.

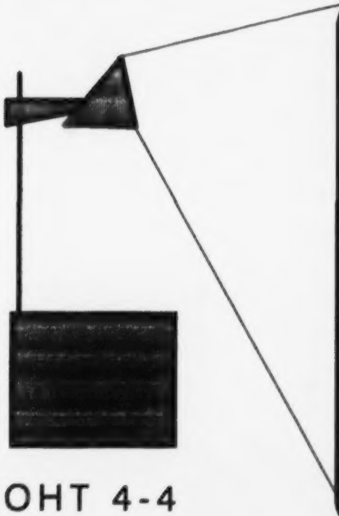
It is a similar situation to the development of VHS Videocassette recorders, originally produced by JVC in Japan. These are now made by a wide range of manufacturers. Despite the fact they may have different features to each other, they all use the VHS recording system. They all use VHS tapes. The tapes recorded on one manufacturer's machine should play back on another manufacturer's machine.

The IBM and IBM Compatible Personal Computers all use the same operating system, known as MS-DOS. As a result, they can all use the same applications programs. MS-DOS was developed by a company called Microsoft. It is a disk operating system - hence the name MS-DOS. MS-DOS is suitable for a computer that is self-contained - it is not so satisfactory for a computer that is linked to others through a network.

Other improved operating systems are constantly being developed. IBM OS/2, or Operating System 2 is better able to make full use of the power of the more recently designed processors. Unix is an operating system for use in large computers and computer networks with multiple users.

Many computer users are usually not even aware of their operating system, even though it is operating every time they use their computer.

Associated with the Operating System will be a number of software 'tools' or programs which carry out general purpose computer programming support. These are known as Systems Software, and include 'debugging' and editing programs. Again, many computer users will not need to make use of these programs.



OHT 4-4

APPLICATIONS SOFTWARE – 1

Instructions to the computer to carry out specific tasks, including:

- word processing
- desk top publishing
- accounting
- database management
- games
- and many others

4-4

APPLICATIONS SOFTWARE or PROGRAMS are written for a specific operating system or a specific computer. Obviously if several different computer manufacturers use the same operating system, then there is a bigger market for such programs.

Applications programs consist of instructions to the computer to carry out specific tasks.

Such tasks include word processing, a highly developed form of typing which automates many of the hitherto manual and repetitive tasks of text creation. Desk top publishing is a development of word processing where text and pictures can be adapted and laid out for professional publication. Desk top publishing does electronically what book, newspaper and magazine printers used to have to do largely by hand.

OHT 4-4 continued on back...

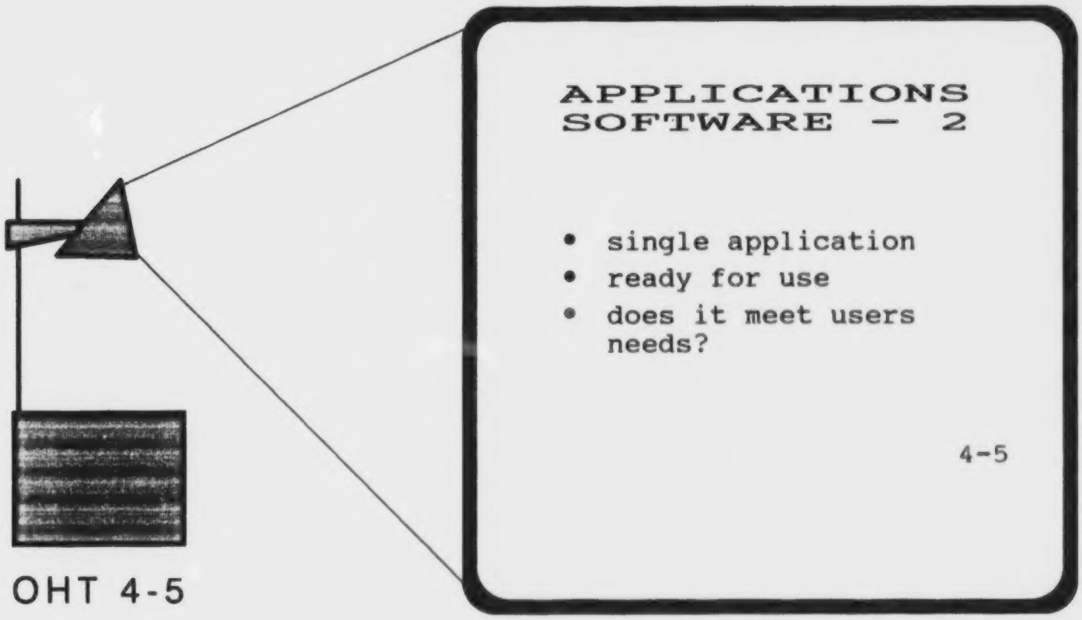
OHT 4-4 continued.

Financial management systems automate many processes related to company management, including accounting, wages preparation and budgeting. They also include investment programmes, and are used by many Stock Exchanges internationally. Database management systems include filing systems, programs that compile telephone directories, and library catalogue and circulation programs.

An important example of a database management programme for information work is CDS/ISIS, or the Computerized Documentation System / Integrated Set of Information Systems, developed by Unesco. This is a general information storage and retrieval system designed to operate and manipulate non-numerical databases. It is available from Unesco free of charge to appropriate institutions with the required equipment. [18]

Computer games are not all to do with video arcade games such as Space Invaders. There are applications programs that enable the computer to play chess to Masters level, simulate driving a racing car or an aeroplane, and instruct children through play. Playing games is almost invariably the means by which many children today become computer literate and develop into using other applications programs. As such, their use should be encouraged.

An increasingly wide range of applications programs are being written for the computer in addition to those on the overhead transparency. Some huge applications programs are being published on laser read discs, known as Compact Disc - Read Only Memory, or CD-ROM for short. These include commercially produced databases, often containing the full text of a large number of documents. For example, a number of major multi-volume dictionaries, encyclopedias and directories are available on CD-ROM. Some libraries now have their catalogues copied onto CD-ROM rather than have on-line access through a network. This is because it can be more economical to have a number of stand-alone computers operating in conjunction with CD-ROM players, than to set up and maintain an extensive network.



OHT 4-5

APPLICATIONS SOFTWARE – 2

- single application
- ready for use
- does it meet users needs?

4-5

Each program will normally only carry out one task. That is, each program carries out a SINGLE APPLICATION.

In theory, anyone can write a computer program and in the early days of computing many people did, as there were no suitable programs available to meet their needs. This included a number of information workers. However, many companies now produce and sell a wide range of computer programs designed to meet most needs, and READY FOR USE. Only rarely is it necessary for the ordinary computer user to have to write their own programs.

Such Computer Programs are usually stored and sold in auxiliary storage, normally on some form of disc. To make the program work, or 'run' it, the program must be inputted to the internal storage within the computer.

OHT 4-5 continued over....

OHT 4-5 continued.

Programs will only work when they have 'correctly' formatted data - any inaccuracies mean that the program will not work properly or at all. The more complex the program, the more likely there will be 'bugs' or errors in it. Many experts believe that the largest computer program ever proposed, to be written for the US Star Wars Project, would never have worked properly because of the number of 'bugs' or errors in it.

Ultimately, it is the user's needs and their response to the program that is vital to its success. If the program is slow in operation, or hard to use then it is unlikely to be successful.

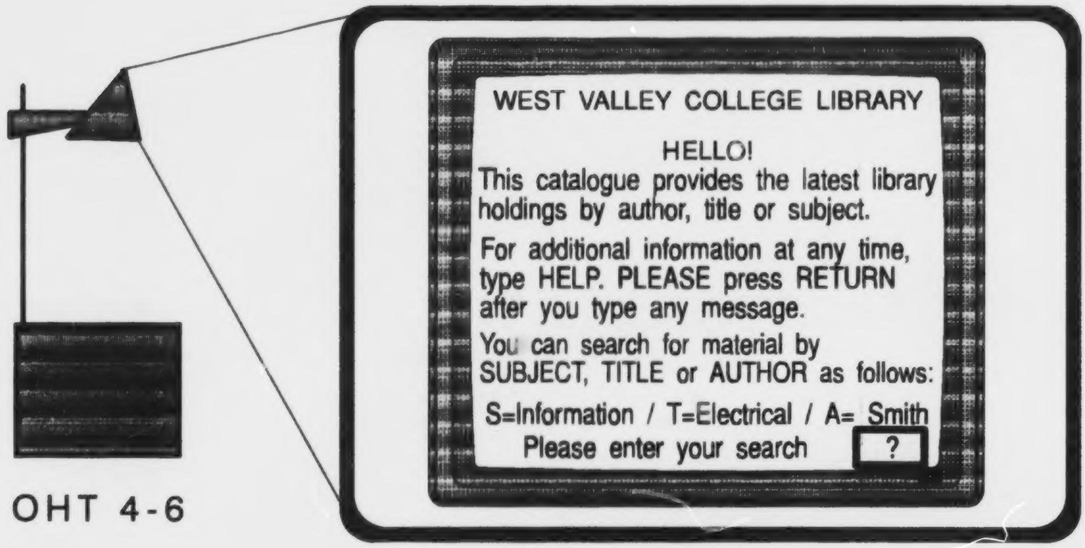
Unfortunately, many systems analysts and programmers do not pay enough attention to creating 'user-friendly' software. The term 'user-friendly', in computer terms, can be taken to mean that any intelligent person with no previous experience of computers should be able to operate the software. There are two popular ways of guiding the intelligent but non-expert user through computer programs - by writing command-driven or menu-driven programs. In command-driven programs the program operates in response to specific commands from the user. Menu-driven programs provide the user with a variety of choices from which they can select the appropriate one.

But even if the program is good, the programmer may well produce a written manual to accompany the program which is incomprehensible to all but a computer expert. It is essential that you consider the needs and abilities of your target audience when writing a software program or a written manual. This should be done in the same way as when writing a lecture, an article or a book, or making a film or a television program. Writers must know who they are writing for.

OBJECTIVE 2. TO SHOW THE WAY INTERACTIVE PROGRAMS APPEAR TO THE USER AND THE TYPES OF RESPONSES THAT MAY BE REQUIRED

***NOTE** In the next part of this session are a number of questions. These can be put by the Instructor, and the participants can be encouraged to discuss them in the session. It would be less effective if the questions were simply put without expecting an answer from the participants.*

In the next overhead transparencies we shall examine a command-driven interactive program for a public access library catalogue. Then we will compare it with a menu-driven program.



WEST VALLEY COLLEGE LIBRARY

HELLO!

This catalogue provides the latest library holdings by author, title or subject.

For additional information at any time, type HELP. PLEASE press RETURN after you type any message.

You can search for material by SUBJECT, TITLE or AUTHOR as follows:

S=Information / T=Electrical / A= Smith

Please enter your search ?

OHT 4-6

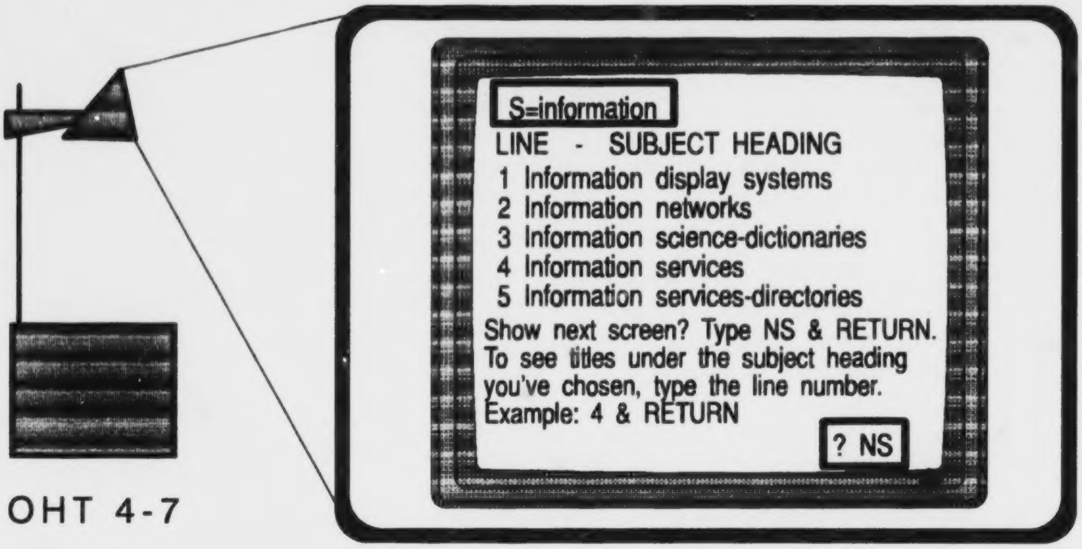
This is the first picture on the screen of the VDU that users would meet as they approached the computerised catalogue of this fictitious library. While this is not a real example, there are many systems which use a command-driven interactive approach.

Whenever you have the opportunity to examine a computerised system in a library, please do so. The more examples you can examine, the more critical you will learn to be about what, at first, appear to be minor details.

OHT 4-6 continued on back...

OHT 4-6 continued.

This program instructs the user how to proceed; not all systems do this. Are these instructions sufficient? What changes would you make to help your users further?



S=information

LINE - SUBJECT HEADING

1 Information display systems
2 Information networks
3 Information science-dictionaries
4 Information services
5 Information services-directories

Show next screen? Type NS & RETURN.
To see titles under the subject heading you've chosen, type the line number.
Example: 4 & RETURN

? NS

OHT 4-7

By typing S= and the name of the subject the user is interested in, the user can access the next screen of the catalogue.

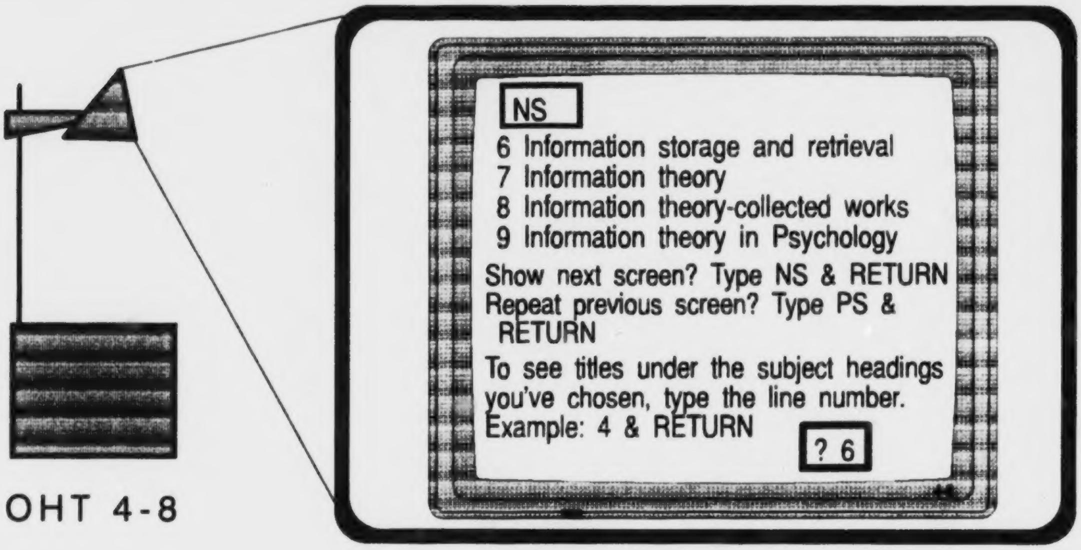
The system assumes that users are familiar with library methods, and expects them to read instructions at the computer terminal. Can we make such assumptions, bearing in mind the type of users we are likely to deal with?

It is not apparent what will happen if the user fails to follow the instructions. How can we help the user who is genuinely afraid of computers or who is inexperienced in their use?

OHT 4-7 continued on back...

OHT 4-7 continued.

The response time to the user's enquiry in this computerised system will presumably be fast. Certainly it will be much faster than the time required to search through a traditional card catalogue. What will user's reactions be to this?



OHT 4-8

NS

6 Information storage and retrieval
7 Information theory
8 Information theory-collected works
9 Information theory in Psychology

Show next screen? Type NS & RETURN
Repeat previous screen? Type PS & RETURN

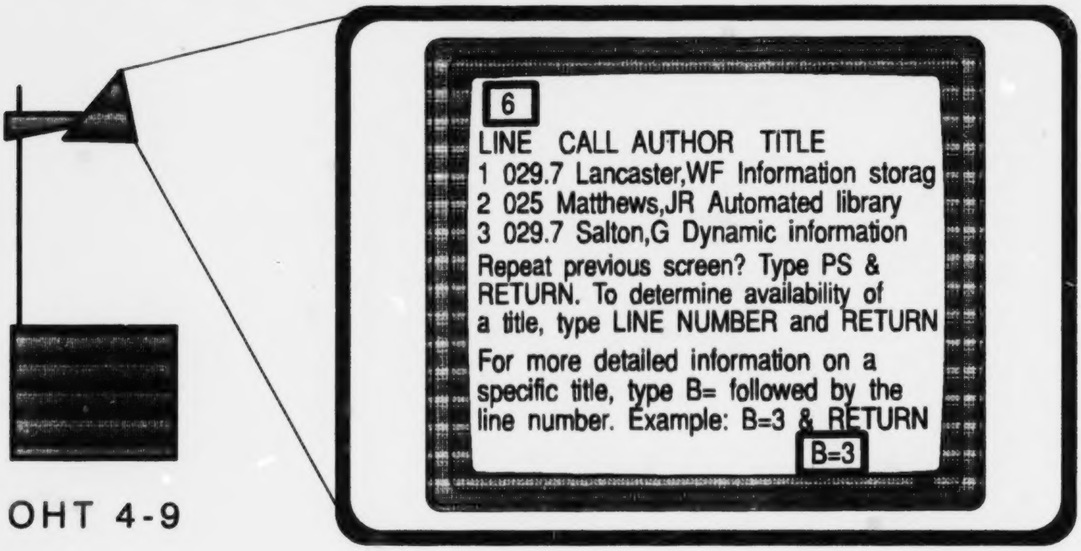
To see titles under the subject headings you've chosen, type the line number.
Example: 4 & RETURN

? 6

By typing NS and pressing the RETURN key, the user can inspect further subject headings.

In an actual library situation, there would be more lines of headings on the VDU than there are on these overhead transparencies.

The example on the overhead transparency permits the user to see the thesaurus of subject terms as well as bibliographic descriptions. Not all systems do this. Would this system be over-complex for the user?



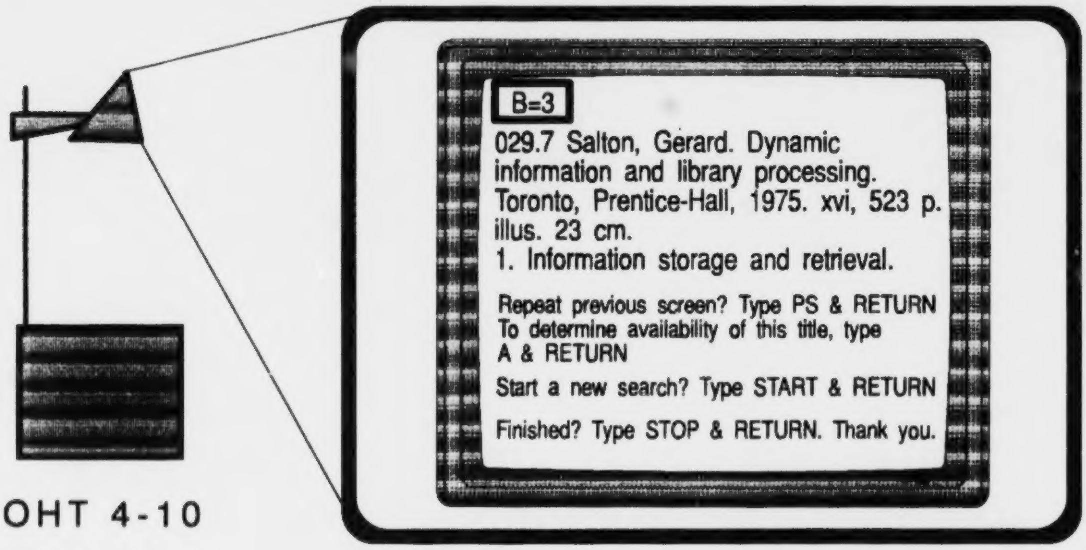
```
6
LINE  CALL  AUTHOR  TITLE
1 029.7 Lancaster,WF Information storag
2 025 Matthews,JR Automated library
3 029.7 Salton,G Dynamic information
Repeat previous screen? Type PS &
RETURN. To determine availability of
a title, type LINE NUMBER and RETURN
For more detailed information on a
specific title, type B= followed by the
line number. Example: B=3 & RETURN
B=3
```

OHT 4-9

By typing line 6 and RETURN, the user has now obtained a further screen. This gives him the details of the materials in the library on information storage and retrieval systems.

Will the user understand that not all of the title is being shown on the screen of the VDU? Some software programs on bibliographic control do limit the number of letters that can be used to identify an individual title.

By typing in B=3, which will involve the user searching for the = sign which is not in a standardised position on many keyboards, they will obtain further information about a specific title from the list above.



B=3

029.7 Salton, Gerard. Dynamic information and library processing. Toronto, Prentice-Hall, 1975. xvi, 523 p. illus. 23 cm.
1. Information storage and retrieval.

Repeat previous screen? Type PS & RETURN
To determine availability of this title, type A & RETURN

Start a new search? Type START & RETURN

Finished? Type STOP & RETURN. Thank you.

OHT 4-10

Does the user need all this information about the material? Should we take the opportunity to find out what users really need? Should we then adjust our records accordingly when we adopt computerised systems?

Both the VDU screen on this overhead transparency and the screen on the previous transparency show that information about the availability of an item can be found by the computer and displayed.

This requires the integration in the computer records of a number of library systems, such as the catalogue and the circulation/issue system. However, in all manually operated libraries such systems are separate from each other. Using some modern software programs libraries can now use the same program to operate both the cataloguing and the circulation processes. Indeed other processes such as ordering materials can be incorporated as well.

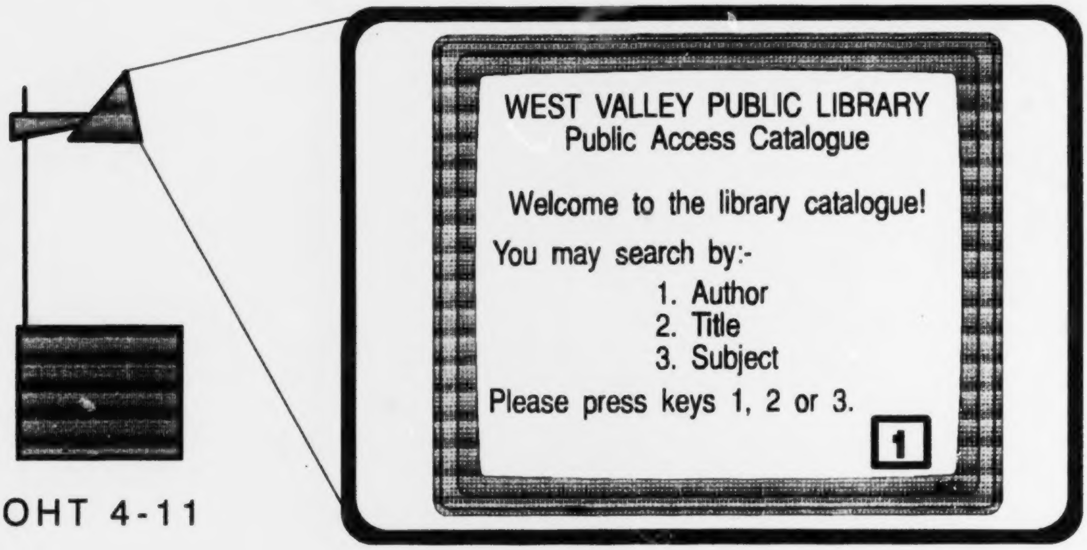
224

OHT 4-10 continued on back...

OHT 4-10 continued.

Will the library benefit from this? Will the user benefit? Will the user either want or expect this integration of systems? Does it matter to users how we operate our systems provided that they have the best possible level of service? What will be the impact of the integration of previously separate systems on library management, organization and staff?

In comparison, we will now examine a menu-driven interactive program for a public access library catalogue, again fictitious.



WEST VALLEY PUBLIC LIBRARY
Public Access Catalogue

Welcome to the library catalogue!

You may search by:-
1. Author
2. Title
3. Subject

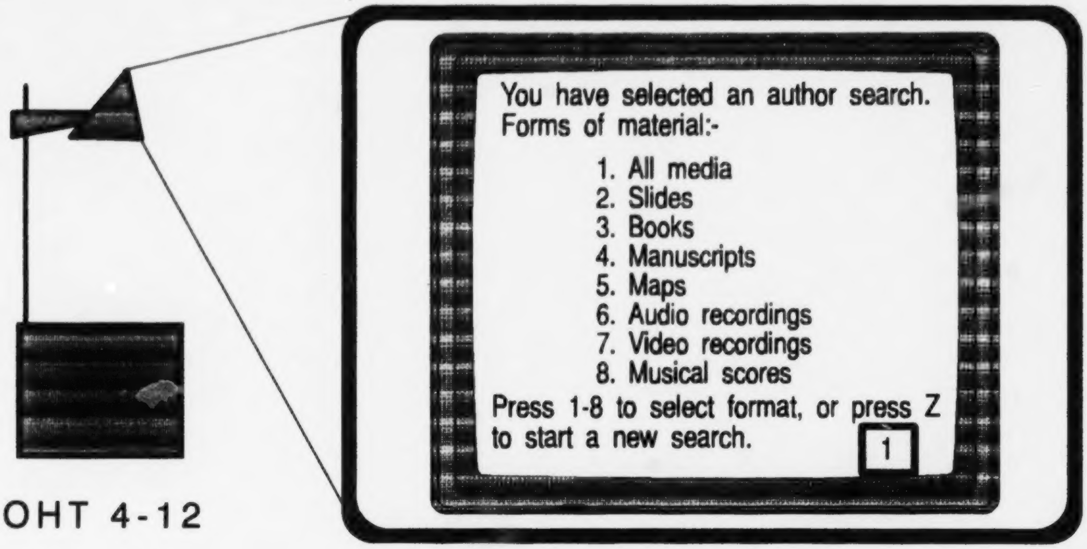
Please press keys 1, 2 or 3.

1

OHT 4-11

What are the differences when comparing this menu-driven program with the previous command-driven program? First, there is less need for instructions or commands. All that is required is a brief greeting and minimal text.

By pressing the '1' key, the user can access the next screen.



You have selected an author search.
Forms of material:-

1. All media
2. Slides
3. Books
4. Manuscripts
5. Maps
6. Audio recordings
7. Video recordings
8. Musical scores

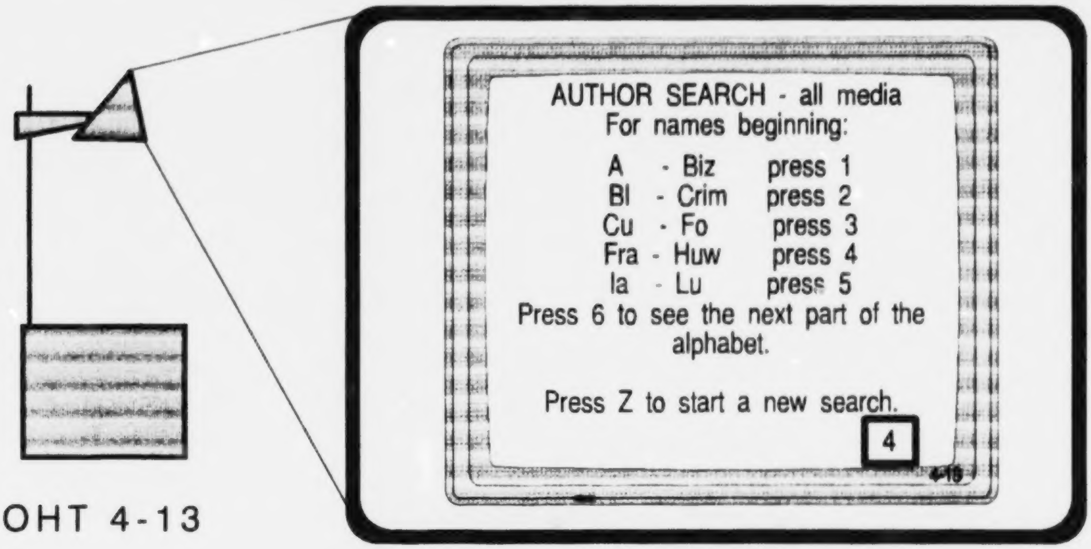
Press 1-8 to select format, or press Z to start a new search.

OHT 4-12

There are, however, a greater number of screens required to proceed through the various menus and screens. This makes the search time longer.

Do you think the users will be concerned about this? It is still faster than searching through a card catalogue!

By pressing 1, the user can examine the entire range of materials the library stocks.



AUTHOR SEARCH - all media
For names beginning:

A - Biz press 1
Bl - Crim press 2
Cu - Fo press 3
Fra - Huw press 4
Ia - Lu press 5

Press 6 to see the next part of the alphabet.

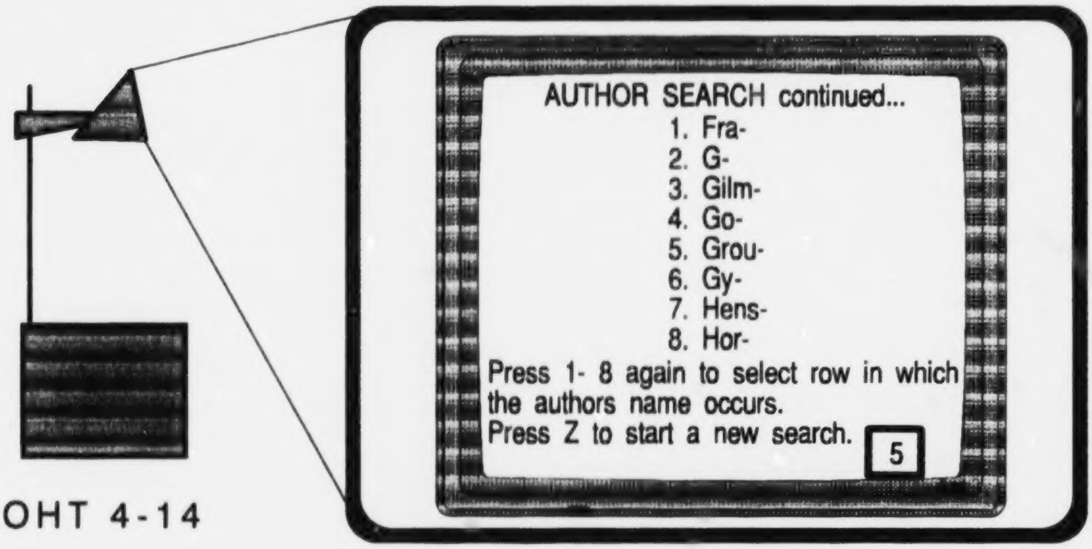
Press Z to start a new search.

OHT 4-13

Because of the large number of items, the computer catalogue has to be broken into sections, just like the old card catalogue. The user can now press 4 to select the right section of the alphabet, or the equivalent of the right 'drawer of the card catalogue'.

Because of the increased number of screens, do you think there will be a difference in the reactions of inexperienced users from experienced users? This is especially important for the librarian who may have to use the system frequently.

However, the librarian who uses the system frequently will soon learn the necessary numbers and will be able to take short cuts. Librarians can use short cuts when working alone, but they must also be able to demonstrate to users and others how to use the Menus properly.



AUTHOR SEARCH continued...
1. Fra-
2. G-
3. Gilm-
4. Go-
5. Grou-
6. Gy-
7. Hens-
8. Hor-

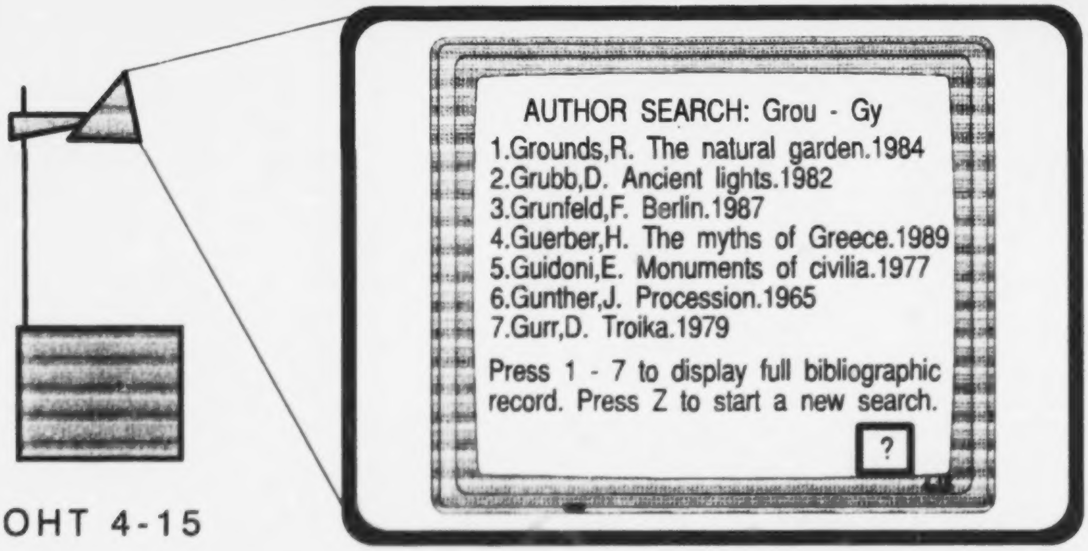
Press 1- 8 again to select row in which the authors name occurs.
Press Z to start a new search.

OHT 4-14

Having selected authors between FRA and HUW, the users are now asked to narrow the search to a smaller section of the alphabet.

Do you see any differences in the two approaches between the ease of learning and ease of use?

By pressing 5, the user can now access all authors in that group.



AUTHOR SEARCH: Grou - Gy
1.Grounds,R. The natural garden.1984
2.Grubb,D. Ancient lights.1982
3.Grunfeld,F. Berlin.1987
4.Guerber,H. The myths of Greece.1989
5.Guidoni,E. Monuments of civilia.1977
6.Gunther,J. Procession.1965
7.Gurr,D. Troika.1979

Press 1 - 7 to display full bibliographic record. Press Z to start a new search.

OHT 4-15

A more detailed description of the full author entry can be obtained if required, but may not be necessary.

So which approach, command-driven or menu-driven, would you prefer? Which system would your users prefer? How could you find out?

Remember that although complex software program like these have to be written by systems analysts and programmers, the role of information professional in system design is most important. You would not want an architect to design a house for you without ever consulting to find out what you required. On-going consultation between the information professional and the systems analyst is essential if the program is to meet the needs of its users.

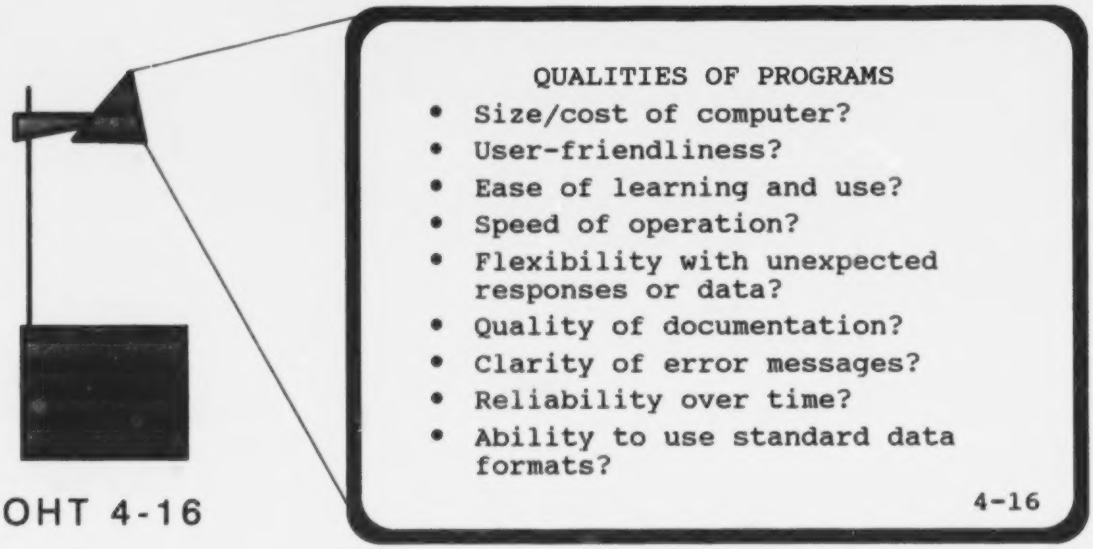
OHT 4-15 continued on back....

OHT 4-15 continued.

Also it is difficult to make significant changes to a program and its associated hardware system once they are delivered. Therefore it must meet your needs before you purchase it.

Whenever a new system like this is installed, it is essential that all staff are properly trained in its use. Some will have to become specialists in its operation. If the staff cannot use the system properly, it cannot be successful.

OBJECTIVE 3. GUIDELINES FOR EVALUATING COMPUTER SOFTWARE



QUALITIES OF PROGRAMS

- Size/cost of computer?
- User-friendliness?
- Ease of learning and use?
- Speed of operation?
- Flexibility with unexpected responses or data?
- Quality of documentation?
- Clarity of error messages?
- Reliability over time?
- Ability to use standard data formats?

4-16

OHT 4-16

Computer programs can be evaluated in a similar way to computer hardware.

Firstly, what size of computer system is necessary to run the appropriate program? How much will the system and the program cost? Remember that many computer programs are expensive and their cost as well of that of the equipment needs to be considered.

Is the program user-friendly? Is it menu-driven, or command-driven? In our case, we may have to consider user-friendliness on two levels. Firstly for ourselves - will it be easy for us and our staff to be trained in and to use the program? Secondly, if the program is to be a public access program, will it be easy for our sometime inexperienced users to use? Ultimately, in a public access system, the users needs MUST take priority over our own, if the program is to be successful with our users.

232

OHT 4-16 continued on back...

OHT 4-16 continued.

Is the program fast in operation, especially in the case of a menu-driven program? Do the selected screens appear immediately, or do you have to wait some seconds? Initially these few seconds may not seem to be a problem, but as staff and users become accustomed to the system, waiting for this period of time will become really frustrating.

How does the program deal with unexpected responses, especially from inexperienced users or the odd user determined to upset the system?

How well written are the accompanying manuals? This will affect the way in which staff are trained to use the system and the ease with which they can cope with any problems that may arise. Are the error messages which the program displays when it finds a problem comprehensible and helpful? Or is it necessary to look them up in the manual each time?

How reliable is the program over a period of time in use? Will it date quickly or leave the staff who have to use it angry over why it was ever selected in the first place?

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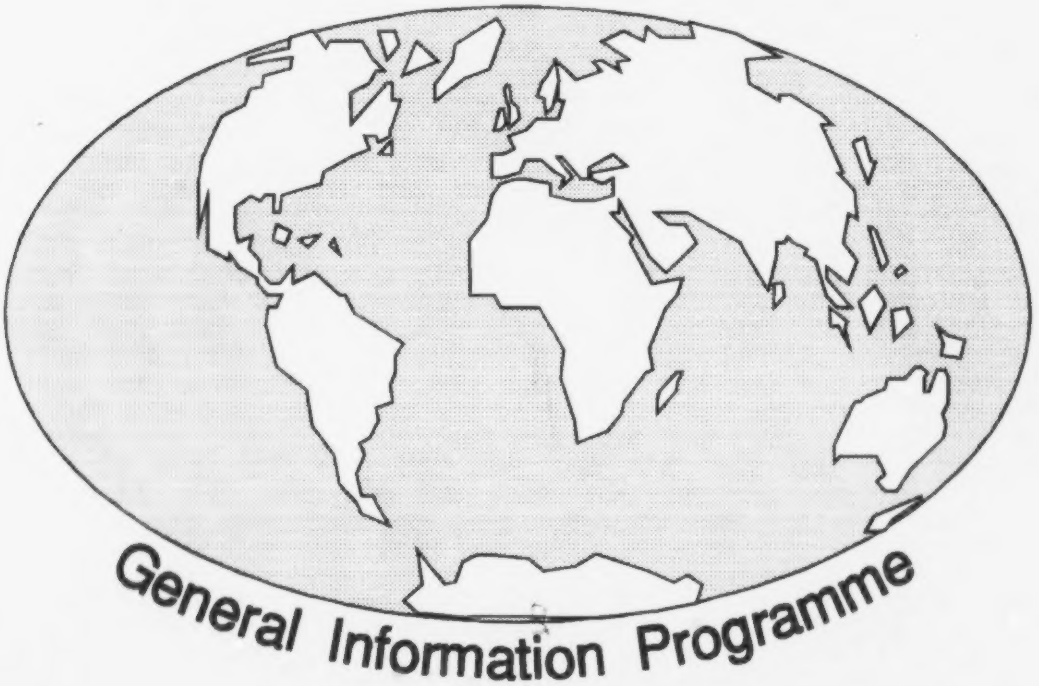
Teaching Package on Standardisation in Information Handling

Module 4

Overhead transparency master copies

Photocopy onto plastic sheets approved by the Photocopier Manufacturer ONLY. Copies should be the same size as the originals, with at least a one centimetre margin all round.



COMPUTER SOFTWARE

OUTLINE:

- Types of software
- Examples of interactive programs
- Evaluating computer programs

COMPUTER SOFTWARE

Three types of software

- Operating systems
- Applications programs
- Data

OPERATING SYSTEMS

- Provided for specific processors
- Provided by manufacturer
- Cannot be changed by user
- Dictates features of all applications programs used with it
- Stored in ROM and/or on disk (DOS)

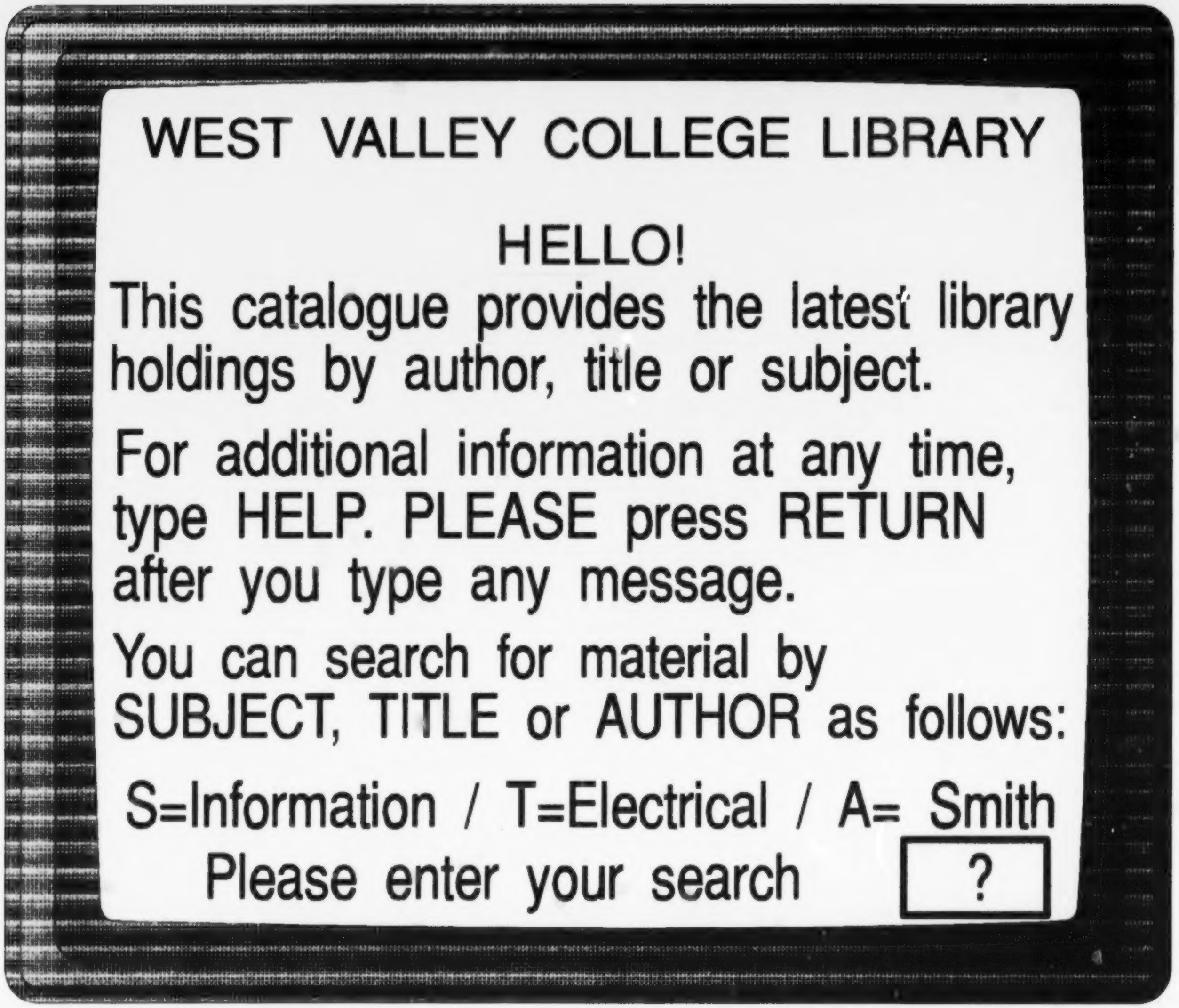
APPLICATIONS SOFTWARE 1

Instructions to the computer to carry out specific tasks, including:-

- word processing
- desk top publishing
- accounting
- database management
- games
- and many others

APPLICATIONS SOFTWARE 2

- Single Application
- Ready for use
- Does it meet users needs?



WEST VALLEY COLLEGE LIBRARY

HELLO!

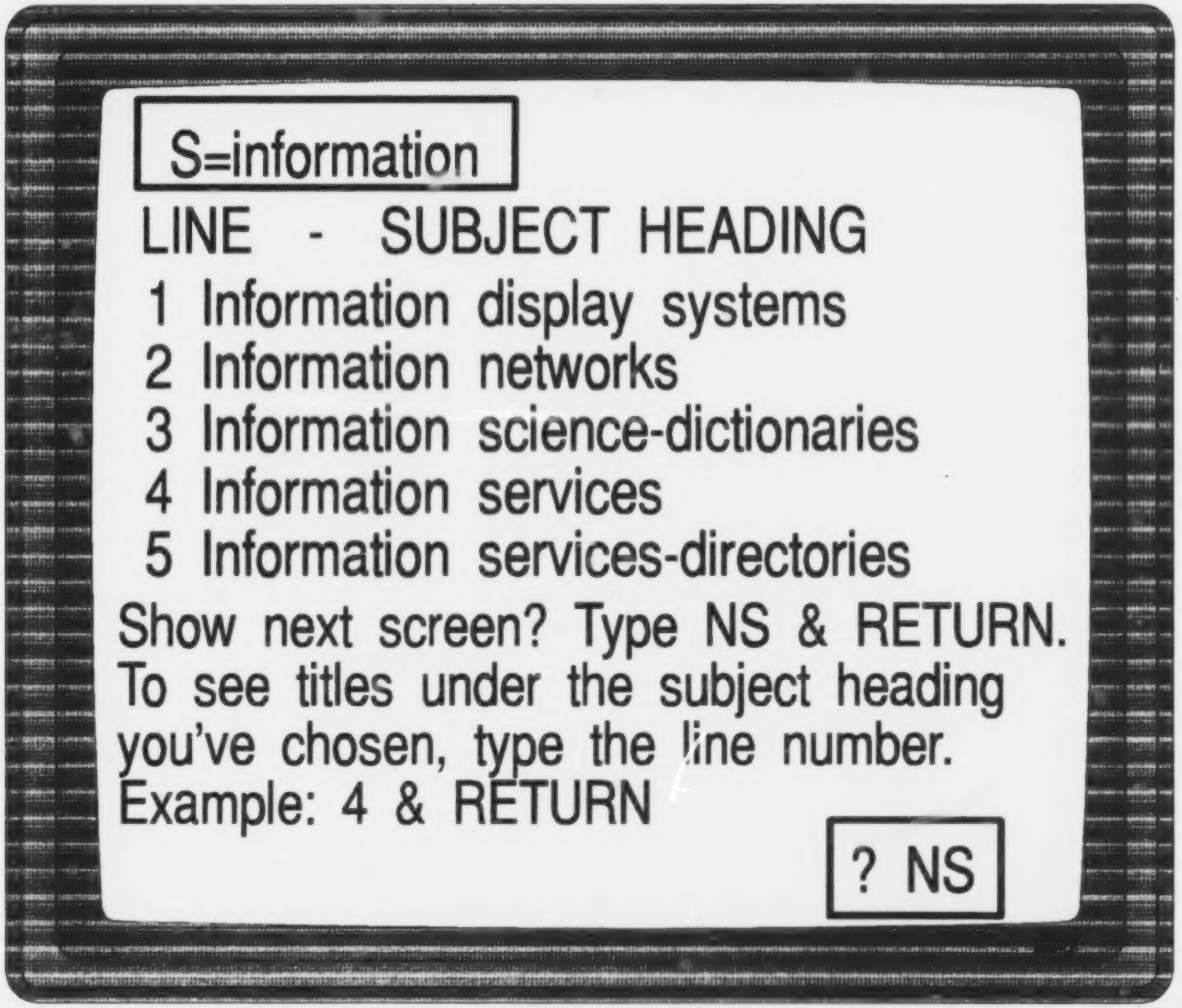
This catalogue provides the latest library holdings by author, title or subject.

For additional information at any time, type HELP. PLEASE press RETURN after you type any message.

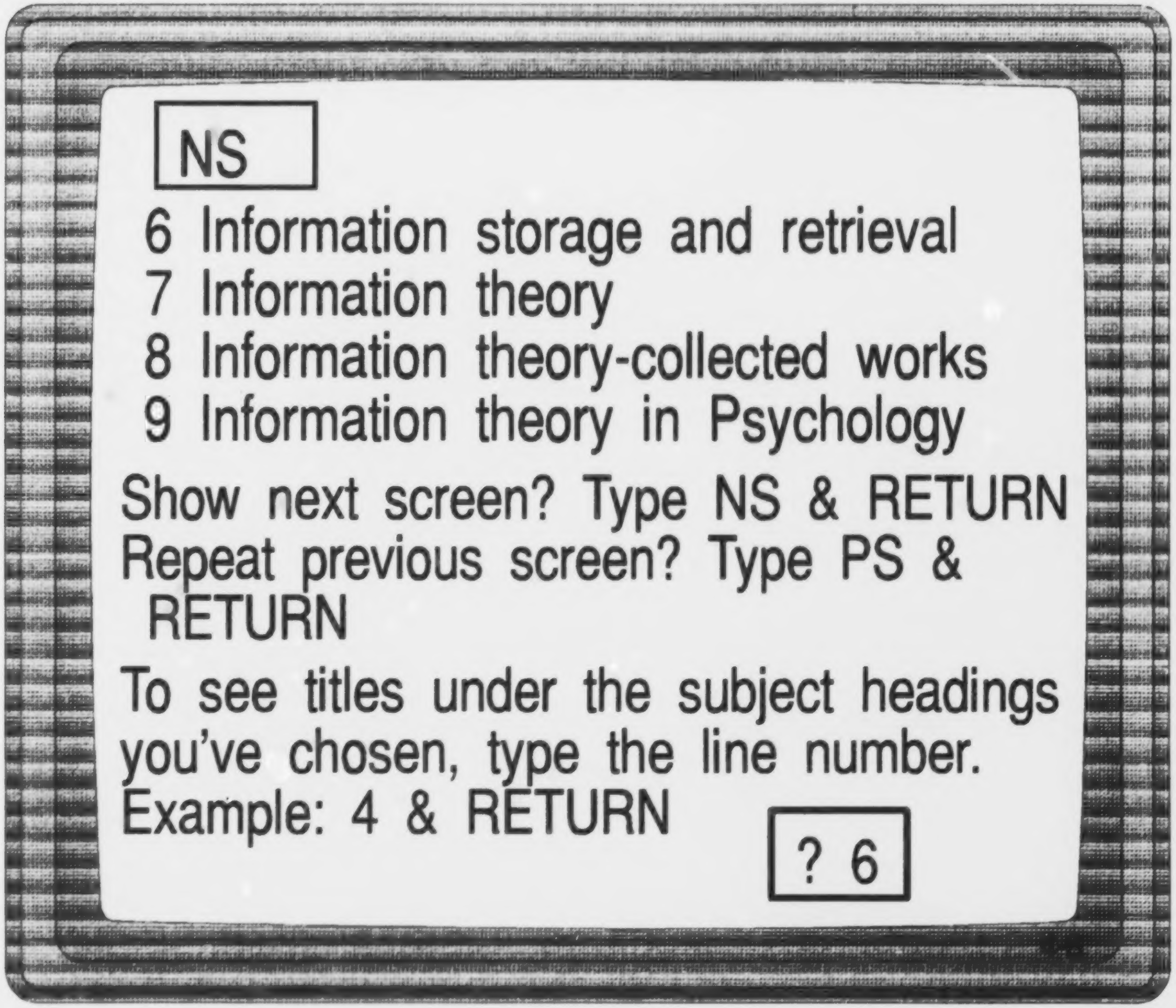
You can search for material by SUBJECT, TITLE or AUTHOR as follows:

S=Information / T=Electrical / A= Smith

Please enter your search ?



```
S=information
LINE  -  SUBJECT HEADING
 1 Information display systems
 2 Information networks
 3 Information science-dictionaries
 4 Information services
 5 Information services-directories
Show next screen? Type NS & RETURN.
To see titles under the subject heading
you've chosen, type the line number.
Example: 4 & RETURN
                                ? NS
```



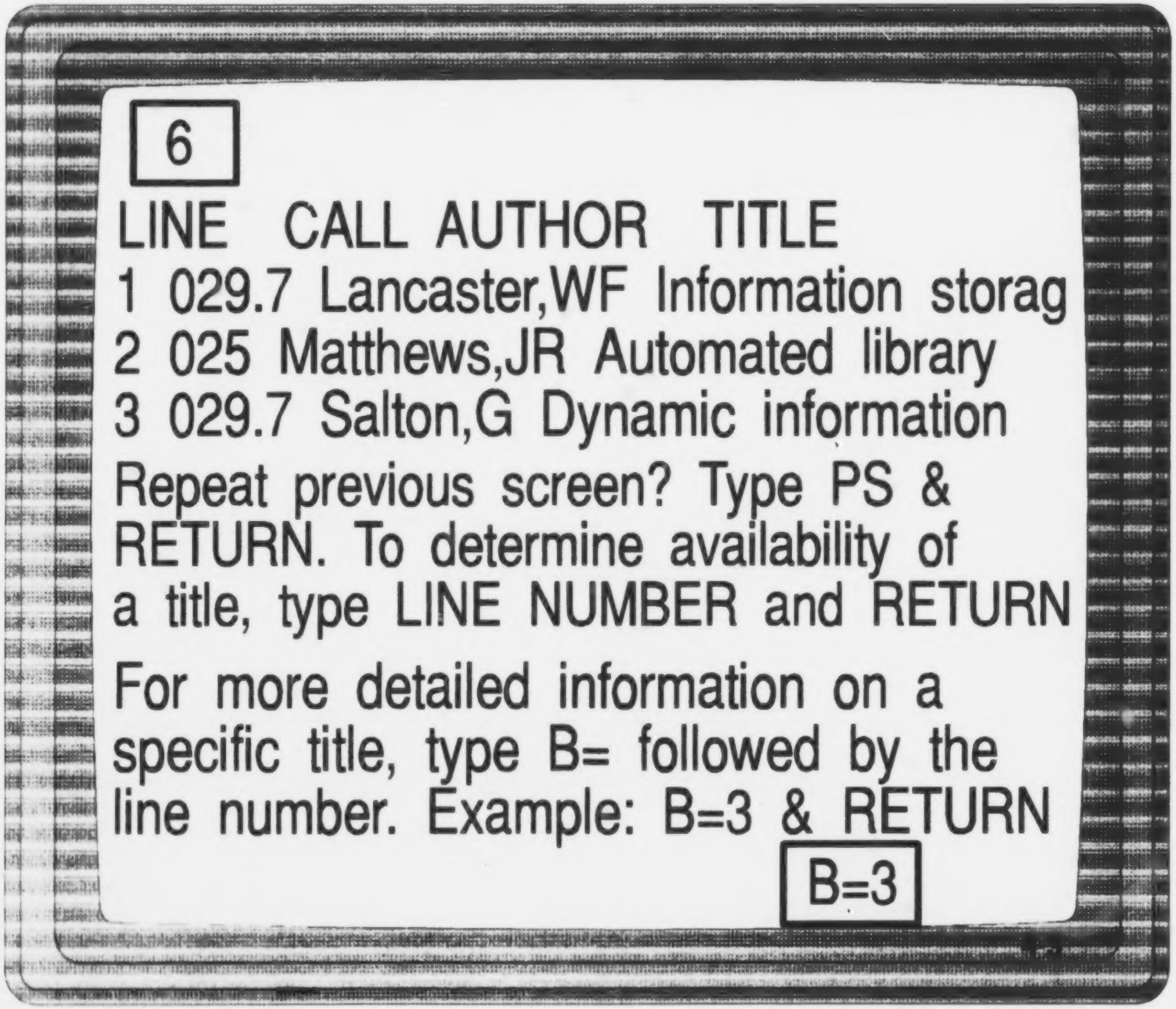
NS

6 Information storage and retrieval
7 Information theory
8 Information theory-collected works
9 Information theory in Psychology

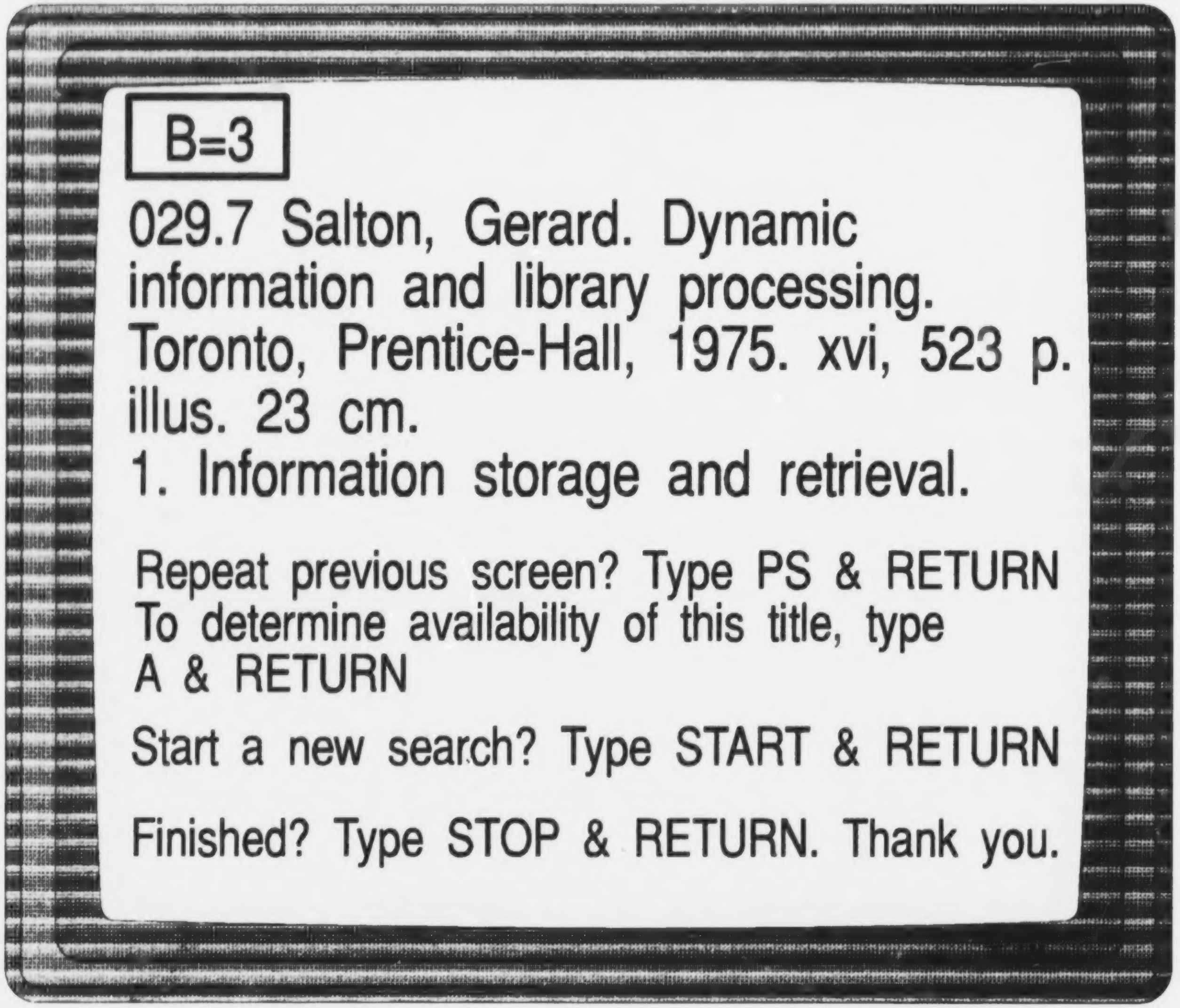
Show next screen? Type NS & RETURN
Repeat previous screen? Type PS & RETURN

To see titles under the subject headings you've chosen, type the line number.
Example: 4 & RETURN

? 6



```
6
LINE  CALL AUTHOR  TITLE
1 029.7 Lancaster,WF Information storag
2 025 Matthews,JR Automated library
3 029.7 Salton,G Dynamic information
Repeat previous screen? Type PS &
RETURN. To determine availability of
a title, type LINE NUMBER and RETURN
For more detailed information on a
specific title, type B= followed by the
line number. Example: B=3 & RETURN
                              B=3
```



B=3

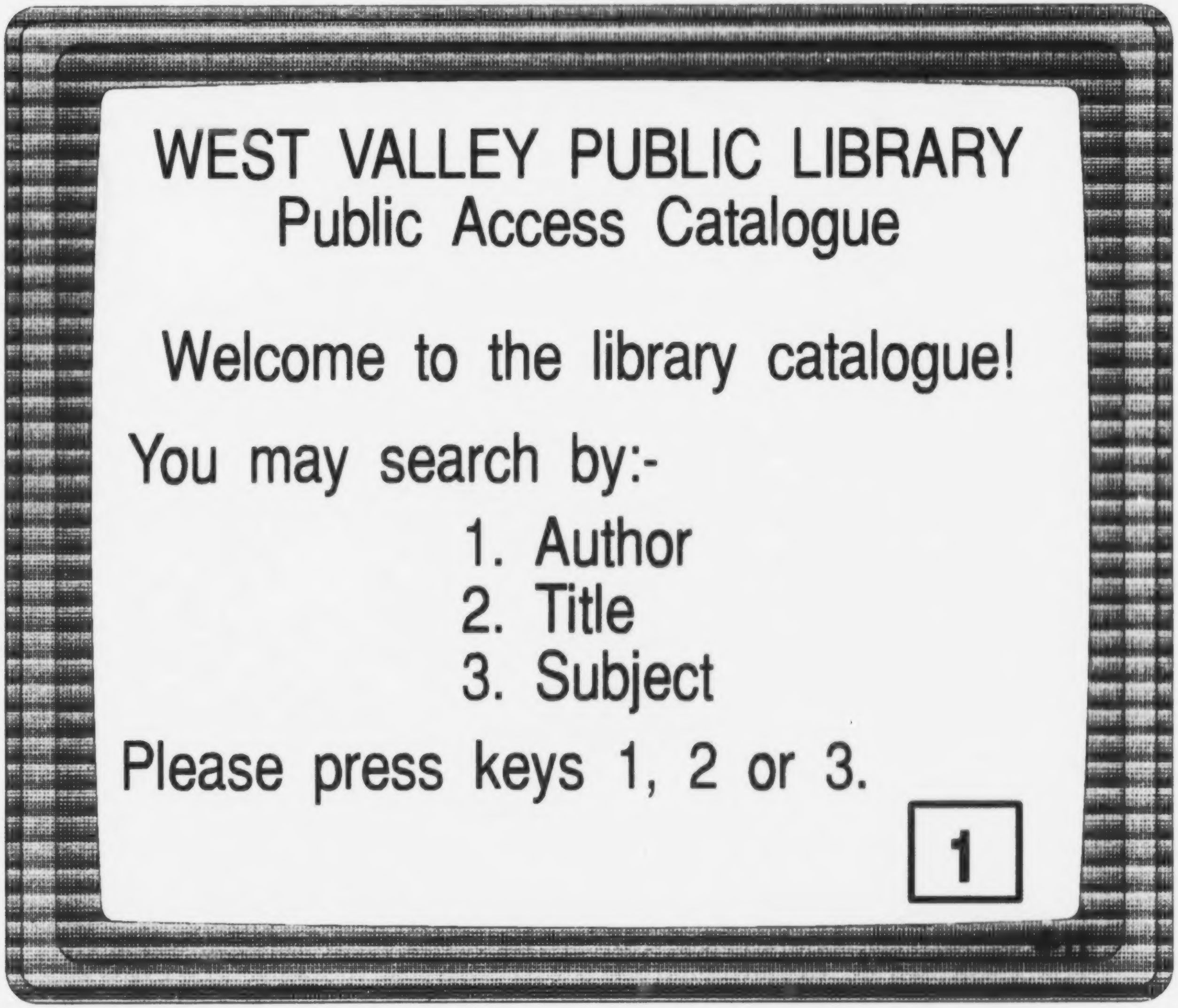
029.7 Salton, Gerard. Dynamic information and library processing. Toronto, Prentice-Hall, 1975. xvi, 523 p. illus. 23 cm.

1. Information storage and retrieval.

Repeat previous screen? Type PS & RETURN
To determine availability of this title, type A & RETURN

Start a new search? Type START & RETURN

Finished? Type STOP & RETURN. Thank you.



WEST VALLEY PUBLIC LIBRARY
Public Access Catalogue

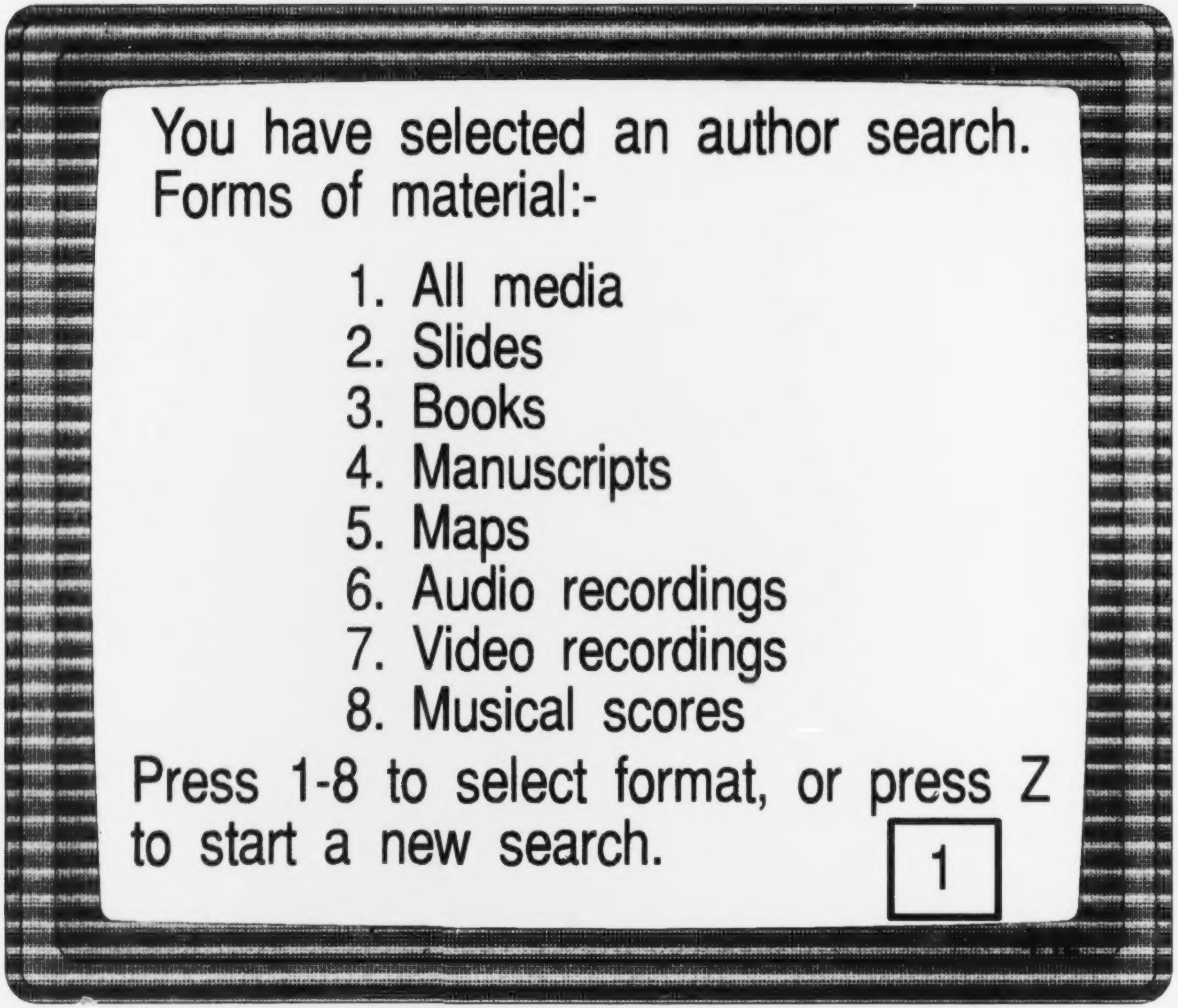
Welcome to the library catalogue!

You may search by:-

1. Author
2. Title
3. Subject

Please press keys 1, 2 or 3.

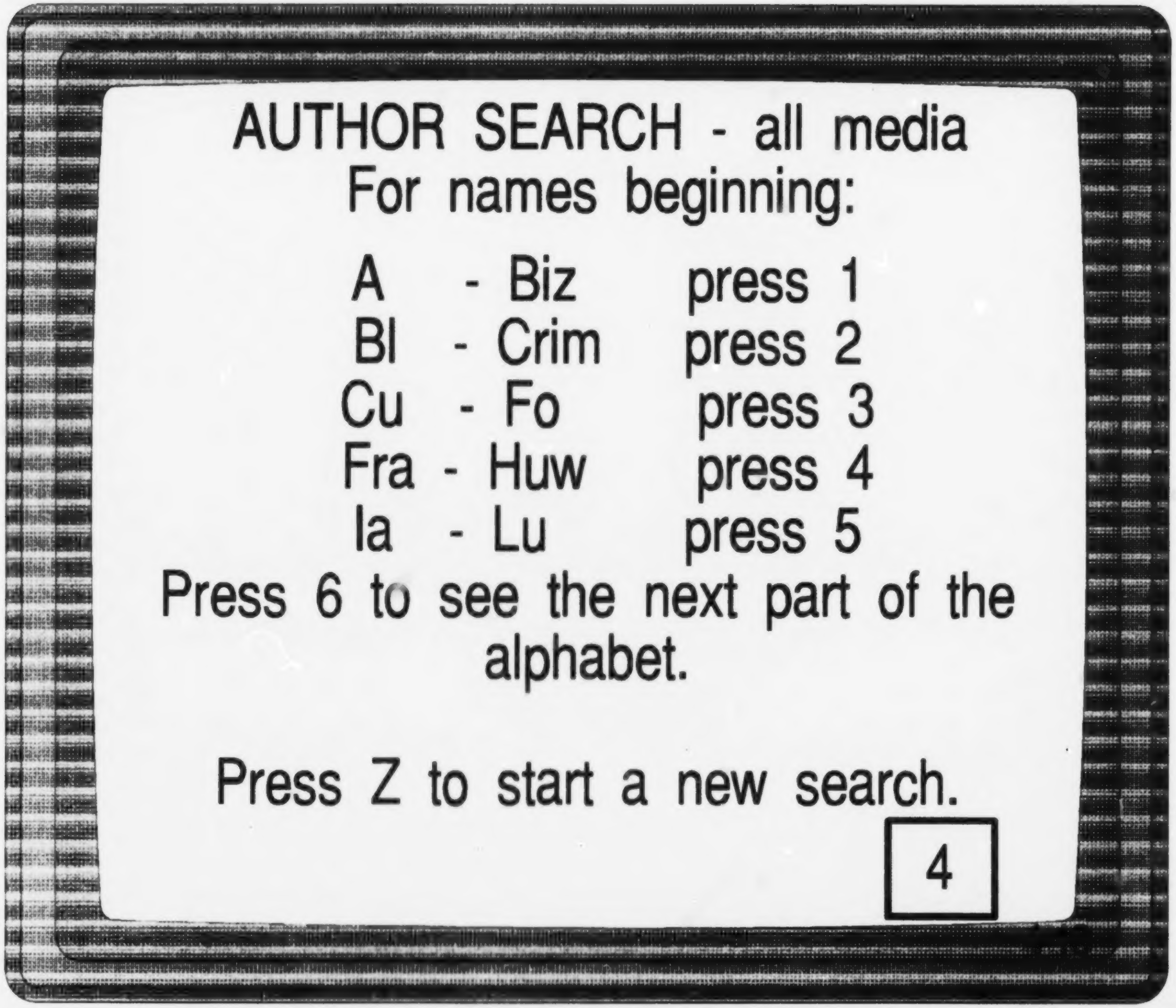
1



You have selected an author search.
Forms of material:-

1. All media
2. Slides
3. Books
4. Manuscripts
5. Maps
6. Audio recordings
7. Video recordings
8. Musical scores

Press 1-8 to select format, or press Z to start a new search.



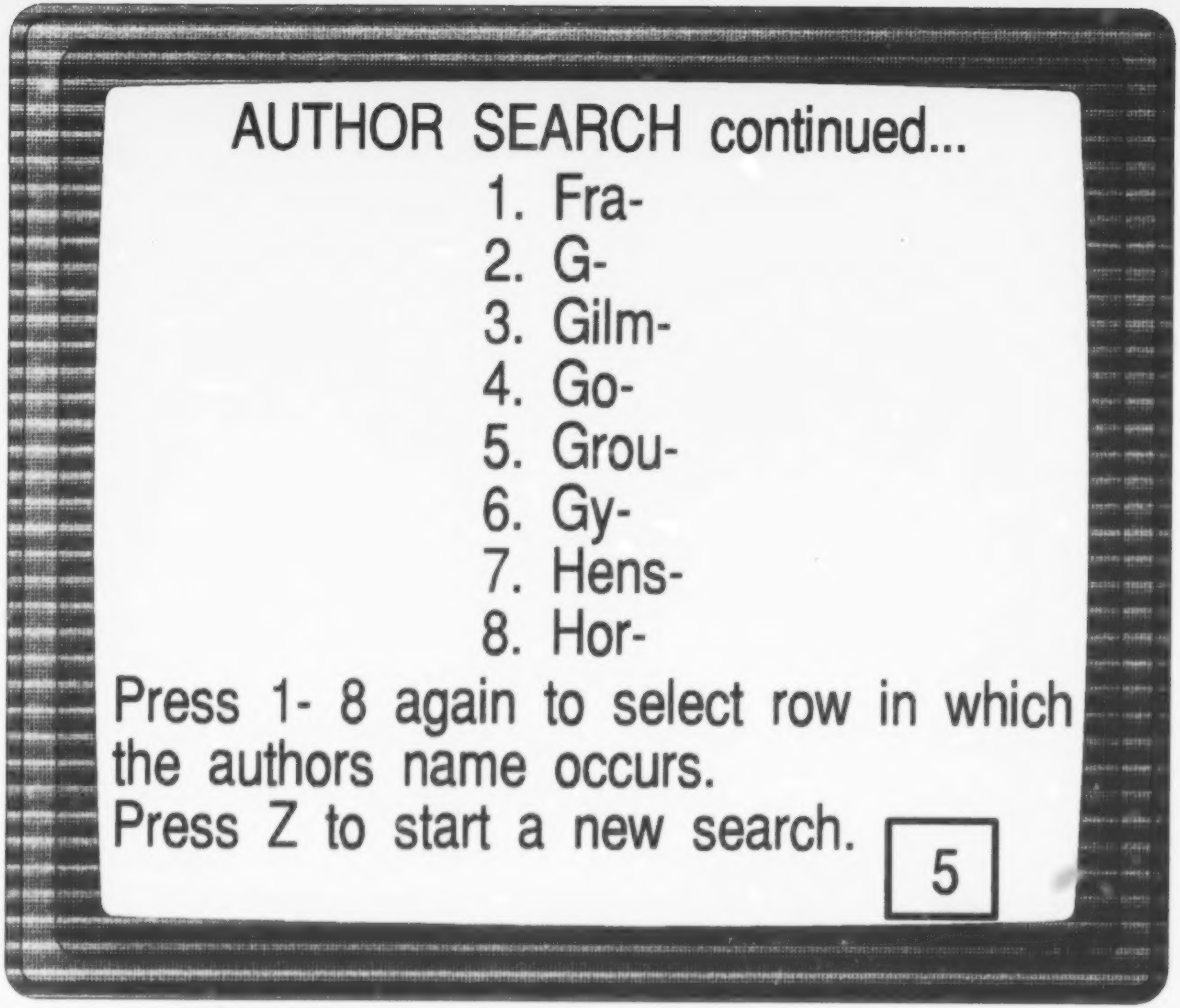
AUTHOR SEARCH - all media
For names beginning:

A - Biz press 1
Bl - Crim press 2
Cu - Fo press 3
Fra - Huw press 4
Ia - Lu press 5

Press 6 to see the next part of the alphabet.

Press Z to start a new search.

4

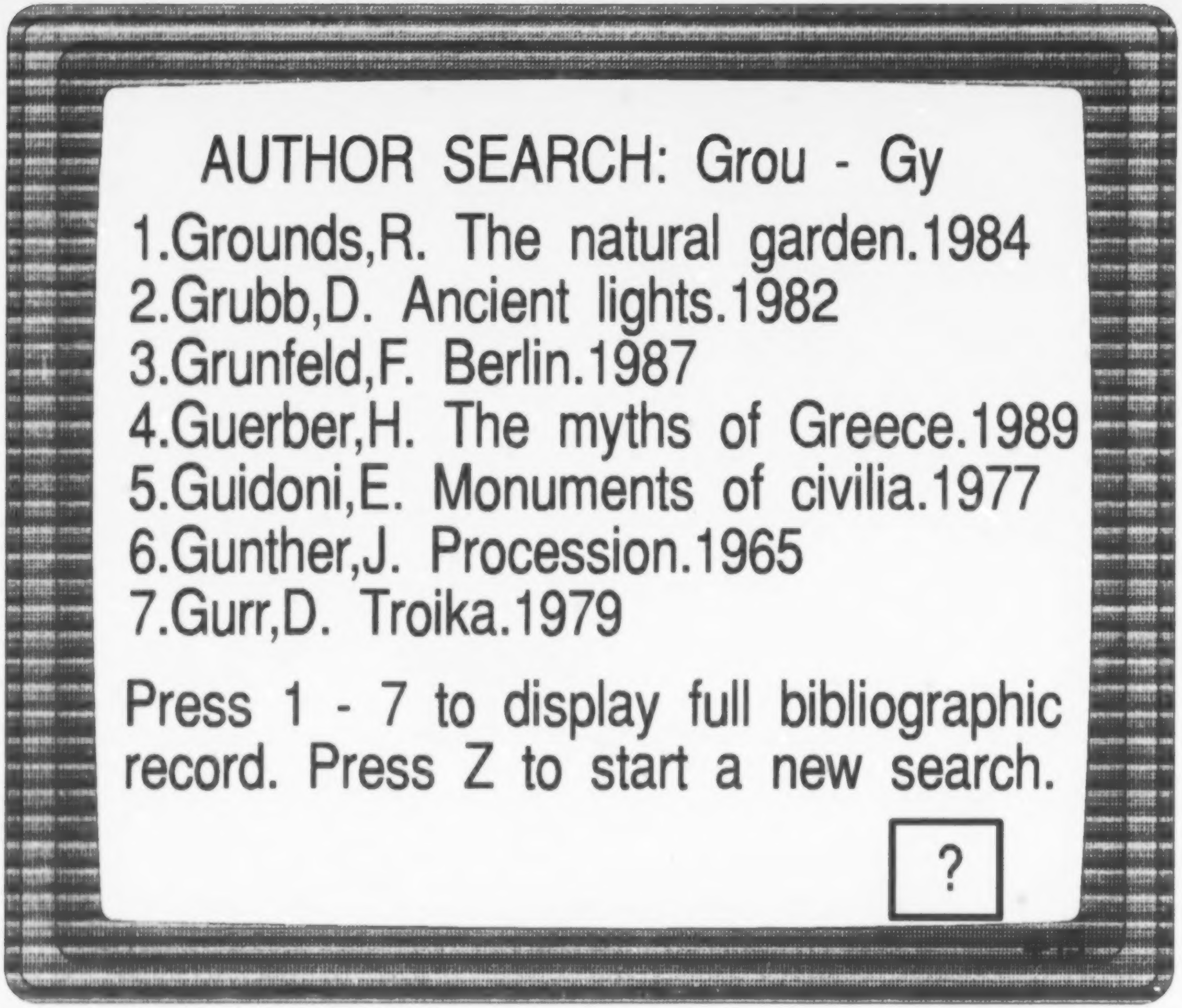


AUTHOR SEARCH continued...

1. Fra-
2. G-
3. Gilm-
4. Go-
5. Grou-
6. Gy-
7. Hens-
8. Hor-

Press 1- 8 again to select row in which the authors name occurs.

Press Z to start a new search.



AUTHOR SEARCH: Grou - Gy

1. Grounds,R. The natural garden.1984
2. Grubb,D. Ancient lights.1982
3. Grunfeld,F. Berlin.1987
4. Guerber,H. The myths of Greece.1989
5. Guidoni,E. Monuments of civilia.1977
6. Gunther,J. Procession.1965
7. Gurr,D. Troika.1979

Press 1 - 7 to display full bibliographic record. Press Z to start a new search.

QUALITIES OF PROGRAMS

- Size/cost of computer?
- User-friendliness?
- Ease of learning and use?
- Speed of operation?
- Flexibility with unexpected responses or data?
- Quality of documentation?
- Clarity of error messages?
- Reliability over time?
- Ability to use standard data formats?

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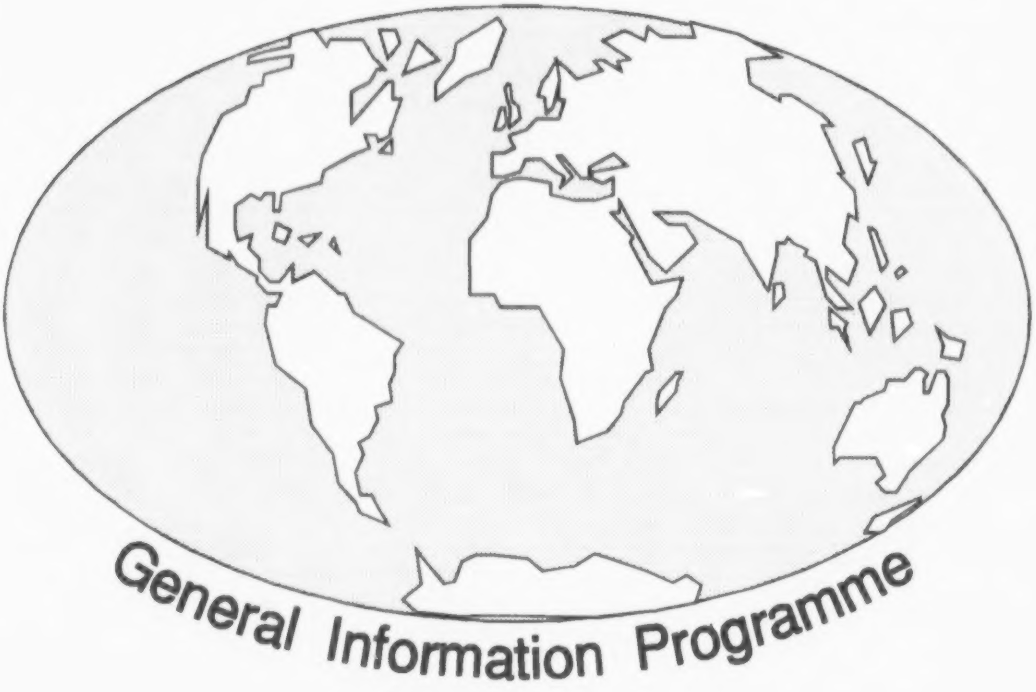
Teaching Package on Standardisation in Information Handling

Module 5

Compatibility in information systems


General Information Programme

INSTRUCTORS

PLEASE read **Module 0 - General Introduction to the Teaching Package,** before using this Module. It contains recommendations on how to use the Programme most effectively.

MODULE 0 also contains:

* A list of **ACRONYMS** giving the full titles of organisations referred to in this Teaching Package.

* A **BIBLIOGRAPHY** of documents referred to. These are followed by a [number] in the Module - full details are given in numerical order in the Bibliography.

* **ADDRESSES** of some major organisations denoted by a [letter] in the Module, are listed at the end of the BIBLIOGRAPHY.

* A **GLOSSARY** of computing terminology.

INTRODUCTION TO MODULE 5

This Module should either follow Modules 3 and 4, or should be used with participants with some previous experience of computers and computer software. It should NOT be used with participants who have little or no previous experience of computers as they will not have the necessary background information to enable them to understand much of the material in this or subsequent modules.

It consists of four sections which discuss the general compatibility issues affecting resource sharing. It provides an awareness of problems that have to be solved when establishing and maintaining an information system.

The term "information service" is used in its widest sense and covers all types of organizations concerned with the collection and dissemination of information, such as libraries, documentation centres, bibliographic agencies, abstracting and indexing services, etc.

The term "information system" refers to a group of "information services" co-operating together.

Compatibility issues affecting information systems are related to resource sharing, a term covering various activities undertaken jointly by a group of libraries or other organizations for the purposes of improving services and/or cutting costs. Resource sharing may be established by informal or formal agreement or by contract, and may operate locally, regionally, nationally, or internationally. The resources shared may be collections, bibliographic data, personnel, planning activities, etc. The issues presented in this module will affect all of these types of sharing.

Introduction continued on back...

Introduction to Module 5 continued

However, this Module does not set out to cover differing bibliographic standards and practices, or differing classification schemes; nor does it discuss in detail technical and technological aspects of incompatibility. Similarly it does not recommend solutions for particular problems of incompatibility.

TIMING

AS A LECTURE

Given as it stands, this Module will last approximately 45 minutes. It will take slightly longer if the Instructor wishes to elaborate on some of the points on the overhead transparencies, as indicated in the Notes.

AS A SEMINAR

This Module should last for approximately 2 hours.

AIM

To familiarise participants with the concept of compatibility and its effect on information systems.

OBJECTIVES

This module is designed to:-

1. show what is meant by compatibility
2. show the relationship between compatibility and standardization
3. identify compatibility issues
4. discuss compatibility within information systems in relation to:-
    4.1. the preparation of bibliographic records
    4.2. the subject approach
    4.3. the computer environment.

BACKGROUND READING

Dierickx, Harold AND Hopkinson, Alan. *Reference Manual for machine readable descriptions. 1986.* [19]

Lancaster, F. W. & Smith, Linda C. *Compatibility issues affecting information systems and services. 1983.* [20]

IT IS RECOMMENDED THAT:

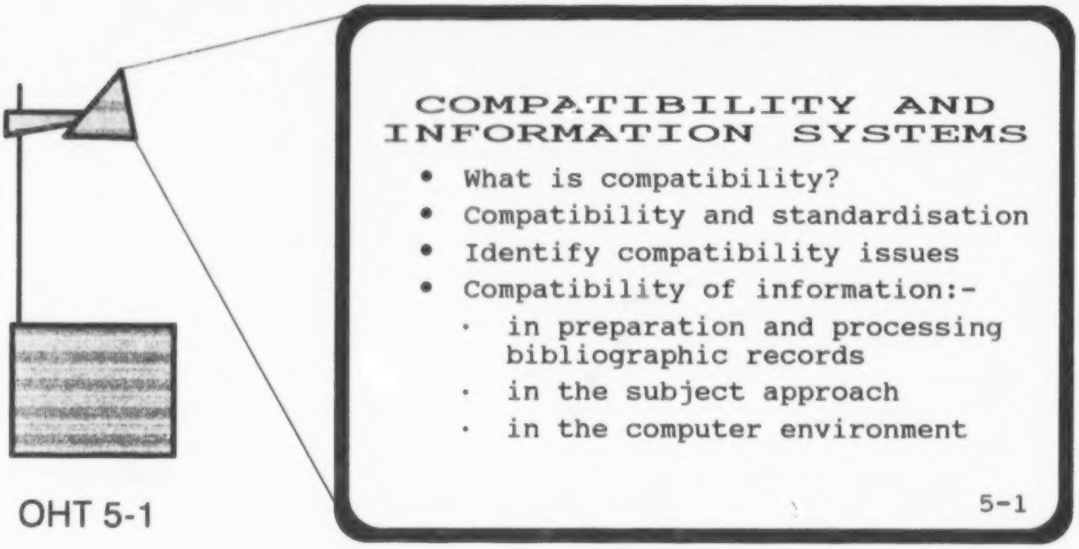
IN SEMINARS AND SHORT COURSES Instructors should give a copy of the Bibliography in Module 0 to all participants. The Bibliography can have further items added to it as appropriate and be updated as new standards are published.

IN LECTURES IN A LIBRARY AND INFORMATION SCIENCE SCHOOL, participants should be made aware of where they can obtain a copy of the Bibliography for further study.

TEACHING NOTES

In this session we will use the term "information service" in its widest sense. Thus it includes all types of organizations concerned with the collection and dissemination of information, such as libraries, documentation centres, bibliographic agencies, abstracting and indexing services, etc.

We will use the term "information system" to refer to a group of "information services" that are co-operating together in some way.



COMPATIBILITY AND INFORMATION SYSTEMS

- What is compatibility?
- Compatibility and standardisation
- Identify compatibility issues
- Compatibility of information:-
  - in preparation and processing bibliographic records
  - in the subject approach
  - in the computer environment

5-1

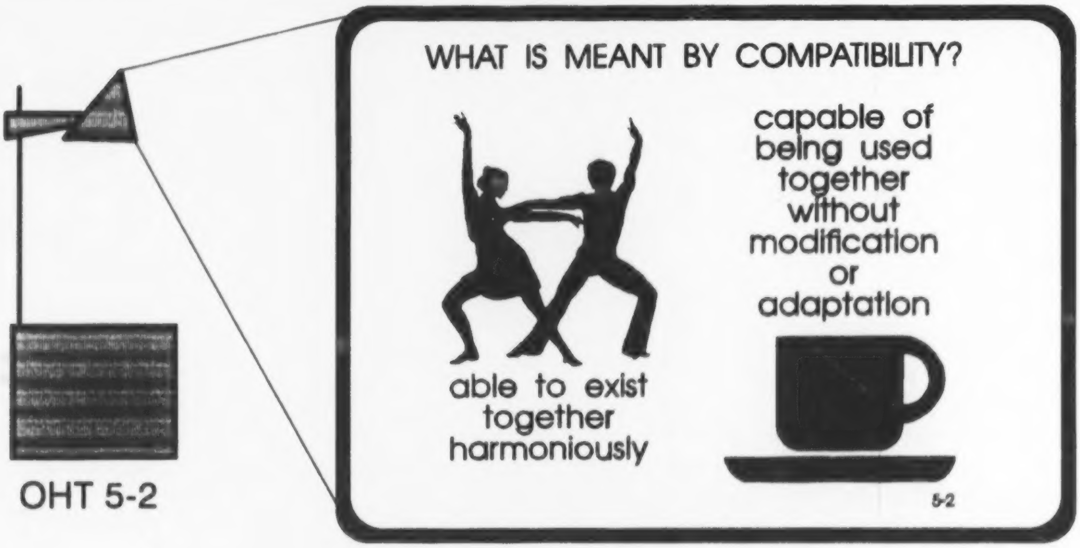
OHT 5-1

The aim of this module is to give you some background information about the need for compatibility in information systems and in the various aspects of their work.

To achieve this aim, we need to examine each of the points shown on this overhead transparency.

NOTE OHT 5-1 should be discussed only briefly as it shows the outline of the subject to be covered. There is no need to elaborate on each topic as these are covered in detail in succeeding OHTs.

OBJECTIVE 1. TO SHOW WHAT IS MEANT BY COMPATIBILITY



OHT 5-2

WHAT IS MEANT BY COMPATIBILITY?

able to exist
together
harmoniously

capable of
being used
together
without
modification
or
adaptation

5-2

Originally the term 'compatibility' was used to express a state of harmony between individuals.

In the context of information systems, the term compatibility is used when talking about the operations of two or more information services and their ability to work together effectively.

The principal reason for ensuring and emphasising compatibility is to enable effective co-operation and resource sharing amongst organizations.

OHT 5-2 continued on back......

OHT 5-2 continued.

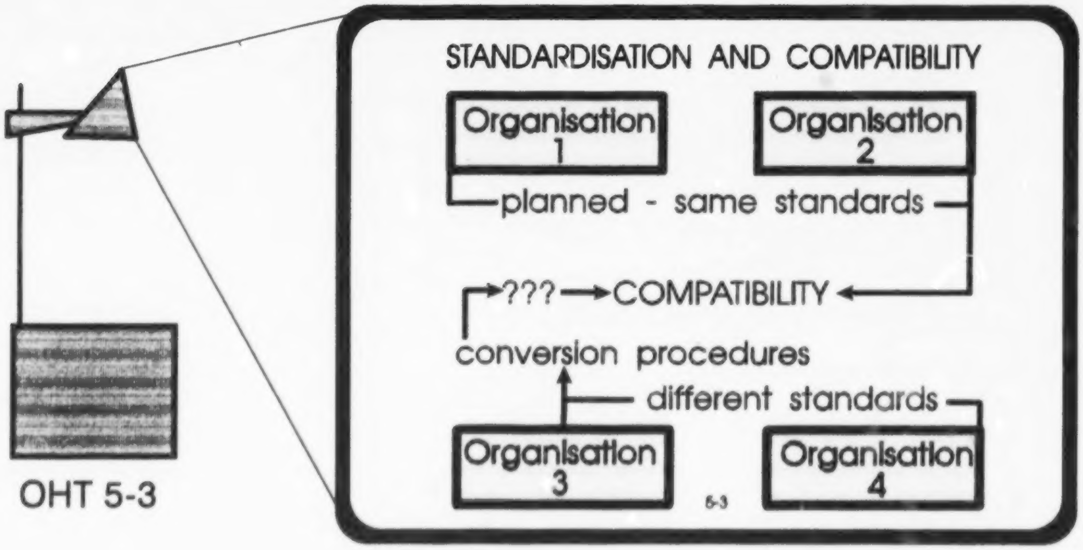
For example, individual information services produce and handle bibliographic records. These represent the physical items found in their collections of materials. Compatibility is important in the production of all types of bibliographic records, but is most important when the records are produced in machine readable form.

This does not necessarily mean that each information service has to be exactly the same. It does mean, however, that the bibliographic records prepared by different information services can be brought together and integrated into one usable file. That is they are capable of being used together without modification or adaptation.

Compatibility forms the basis of much of the work that has been done to promote the use of national and international standards. Much of this work has been performed by the International Organization for Standardization, (ISO). [3][A]

NOTE. For further information on ISO, see Module 2, and the BIBLIOGRAPHY and ADDRESSES in Module 0.

OBJECTIVE 2. TO SHOW THE RELATIONSHIP BETWEEN COMPATIBILITY AND STANDARDIZATION


STANDARDISATION AND COMPATIBILITY

Organisation 1

Organisation 2

planned - same standards

???→COMPATIBILITY

conversion procedures

different standards

Organisation 3

Organisation 4

OHT 5-3

Since the 1960's, national and international standardizing bodies have worked to develop the standards needed to promote co-operation in information processing. This in turn has affected the work of information services and systems.

For there is a relationship between standardization and compatibility. If two or more information services adopt the same standards, this is the most effective way of ensuring compatibility in any functions they will perform together. If they are compatible, they can operate as a co-operative information system.

For example, if two or more organisations are considering the exchange of records relating to their sources of information, they should adopt the same standards relating to the preparation and production of these bibliographic records.

OHT 5-3 continued on back .....

OHT 5-3 continued .....

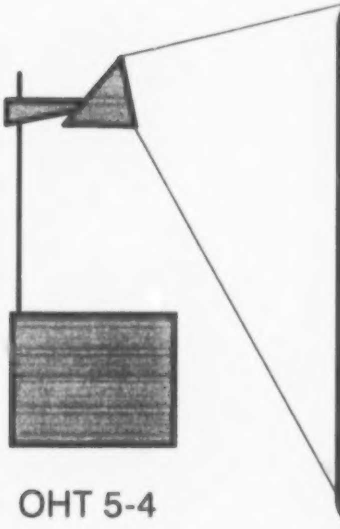
Compatibility can sometimes be achieved without standardization. This involves the use of some procedures or devices which reconcile or convert the records of one information service to the format used by another information service. But such solutions introduce further barriers to be overcome, and will probably be more expensive and less effective.

In planning and establishing a co-operative information system, it is best to build compatibility into the system from the beginning. The standards for every step of the preparation of records should be agreed upon. Similarly, other standards related to the functions and services that will be part of the operational system should also be mutually agreed.

Of course this is much more difficult when a national or regional information system is planned that will include co-operative information systems that already exist. This is also true when a single service with a long tradition of bibliographic development becomes involved in resource sharing with other organizations. Progress toward the development and adoption of common bibliographic standards can be slow.

In such cases there are many difficulties to overcome. These include changing established procedures; overcoming staff resistance to change; and retraining them. However, the great advantages produced by resource sharing outweigh these difficulties. Unfortunately, they are not likely to become apparent until the system has been established and is operating successfully.

OBJECTIVE 3. IDENTIFY COMPATIBILITY ISSUES IN INFORMATION SYSTEMS



COMPATIBILITY IN RELATION TO RESOURCE SHARING

- resource sharing concerned with 'records'
- resource sharing facilitated by computer processing

BUT WITHOUT COMPATIBILITY

- computer processing not efficient
- resource sharing not economical

5-4

OHT 5-4

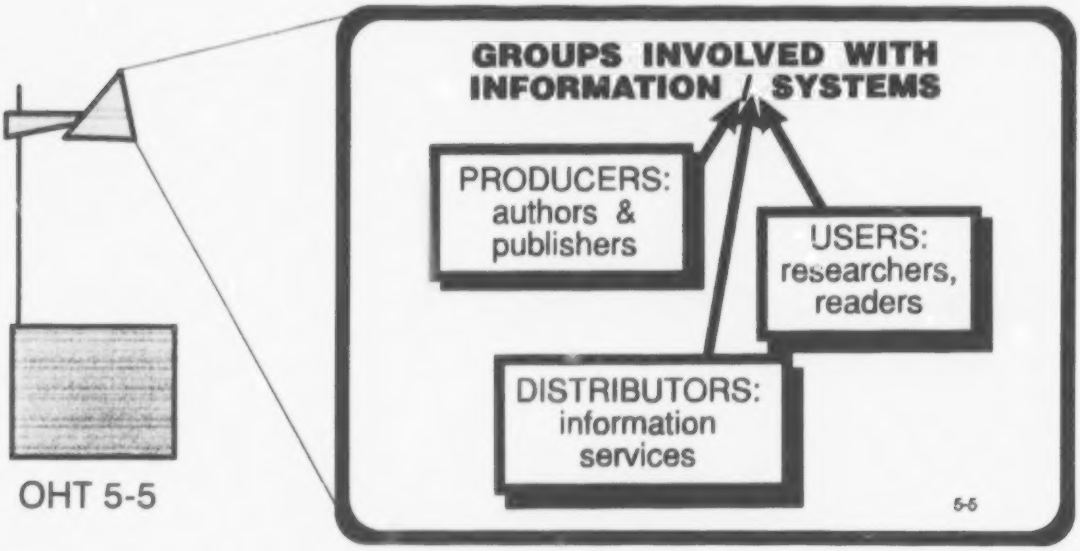
Generally compatibility is related to resource sharing, as in the example we have just examined. In particular, this means some form of exchange of bibliographic records, or some means of common access to those records. It is concerned initially with the recorded description of an item of informational content, NOT the physical item itself. However, the physical item may be 'loaned' in some way at a later stage.

Computer and telecommunications technologies greatly facilitate resource sharing among information systems. Some forms of co-operation, such as the exchange of large bibliographic files, are impractical or even impossible in a manual environment.

OHT 5-4 continued on back...

OHT 5-4 continued

In an automated environment the possibilities of co-operation are much greater. But at the same time, compatibility becomes increasingly important. Humans are flexible and adaptable; computers are not. Computers can only operate efficiently when standards are rigourously followed and compatibility is maintained. In an automated environment, a loss in efficiency results from the absence of compatibility. This can add substantially to the costs of resource sharing.



GROUPS INVOLVED WITH INFORMATION / SYSTEMS

PRODUCERS: authors & publishers

USERS: researchers, readers

DISTRIBUTORS: information services

OHT 5-5

Compatibility affects the three groups most closely connected with information and its dissemination.

These are the producers of information, that is the authors and publishers of items of informational content in various physical forms.

Then there are the distributors of information. This includes information services and other organizations most interested in the establishment of information systems.

And there are the users of information: those making use of information services.

OHT 5-5 continued on back ...

OHT 5-5 continued.

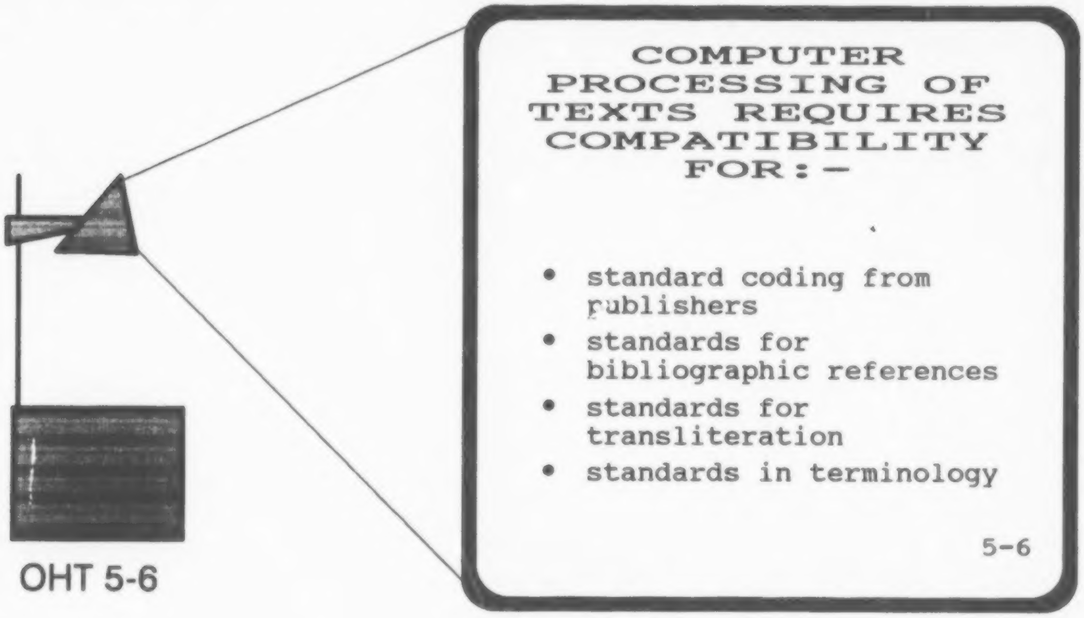
New developments in audiovisual, computer and telecommunications technologies, have begun to blur the distinctions between author and publisher, and between publisher and distributor.

Such developments include the use of photocomposition, to generate publications directly from machine readable files. These files are produced on a word processor, or by some other form of computer, rather than from a paper based document. The machine readable version can then be used as input to other operations if required.

Online computer systems connected to communications networks make it easy for authors to be their own publishers. This makes it difficult to judge what is the "final text".

Information services and publishers are creating new databases, available to other users. This is a form of publishing, though often only in machine readable form.

But unless compatibility is built in to these and future developments, the users of information will be hindered, rather than helped by them.



COMPUTER PROCESSING OF TEXTS REQUIRES COMPATIBILITY FOR:-

- standard coding from publishers
- standards for bibliographic references
- standards for transliteration
- standards in terminology

5-6

OHT 5-6

Because of these developments in publishing and distributing information, compatibility issues are arising. For ever increasing amounts of machine readable text can now be manipulated by computers in various ways.

Therefore an information service making use of machine readable texts from various publishers will require a level of compatibility in the way the texts are encoded. This is essential to allow them to be integrated, searched, and manipulated.

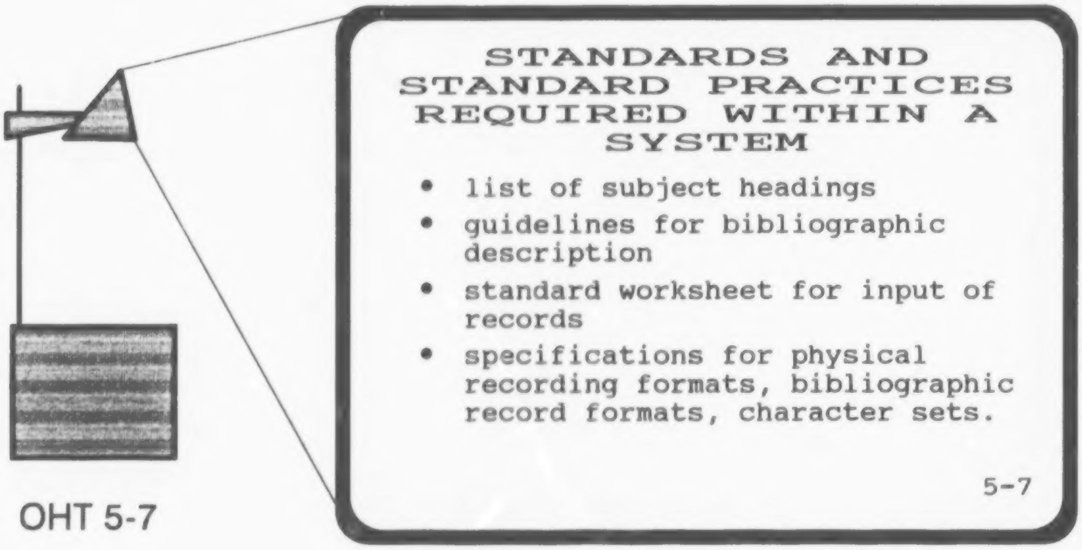
OHT 5-6 continued on back...

OHT 5-6 continued

It is also increasingly important that publishers follow common standards relating to bibliographic citations and transliteration. And as computers can now translate text automatically or semi-automatically, there must be a high level of standardization of terminology.

At present, some of these issues only affect computer publishing. Many other problems of compatibility which affect all information publishers, distributors and systems can be overcome by the application of existing national and international standards.

OBJECTIVE 4. TO DISCUSS COMPATIBILITY WITHIN INFORMATION SYSTEMS



STANDARDS AND STANDARD PRACTICES REQUIRED WITHIN A SYSTEM

- list of subject headings
- guidelines for bibliographic description
- standard worksheet for input of records
- specifications for physical recording formats, bibliographic record formats, character sets.

5-7

OHT 5-7

Some information systems may be small, with a membership of only two or more co-operating information services, one of which may act as the co-ordinating centre. Others may be large, with many decentralized co-operating services contributing records and information to a unit at the centre of the system, the co-ordinating centre.

In every case, however, compatibility can be ensured when the system is planned from the beginning. Basic to its design and development will be the standards and practices agreed to and operated by all co-operating members. The rigourous application of the accepted standards throughout the system allows the co-ordinating centre to accept input from the decentralized member services.

OHT 5-7 continued on back......

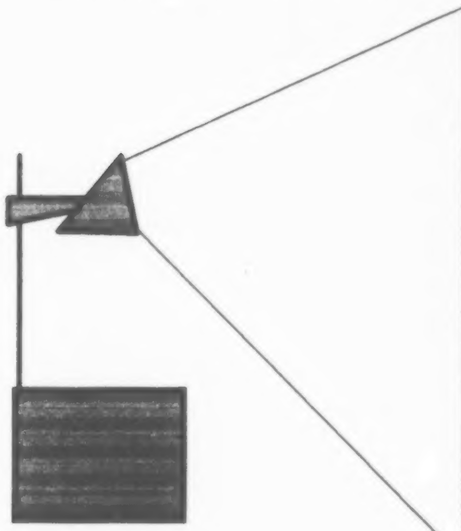
OHT 5-7 continued.

Records of the holdings of member services may reach the co-ordinating centre in various compatible forms. These may be on typed standard worksheets, on magnetic tape or disk, or on optical character recognition (OCR) sheets. The input can then be merged at the co-ordinating centre, by computer. This forms a data-base which can then be published in printed or machine readable form.

A number of international information systems work in this way. One example is AGRIS, the International Information System for the Agricultural Sciences and Technology. This is organised by the Food and Agriculture Organization of the United Nations.

Another example is ISDS, the International Serials Data System, which is responsible for the allocation of International Standard Serial Numbers, ISSN. These can now be found printed on the covers of most periodical publications available throughout the world. [21][G]

NOTE - ISDS and ISSN's are dealt with in more detail in Module 6.



OHT 5-8

RESPONSIBILITIES OF A CO-ORDINATING CENTRE

- co-ordinate member's activities
- maintain policy, standards, practices
- monitor input
- train member's staff
- provide technical assistance
- maintain data-base of system
- publish its products
- provide information
- liaise with other information systems

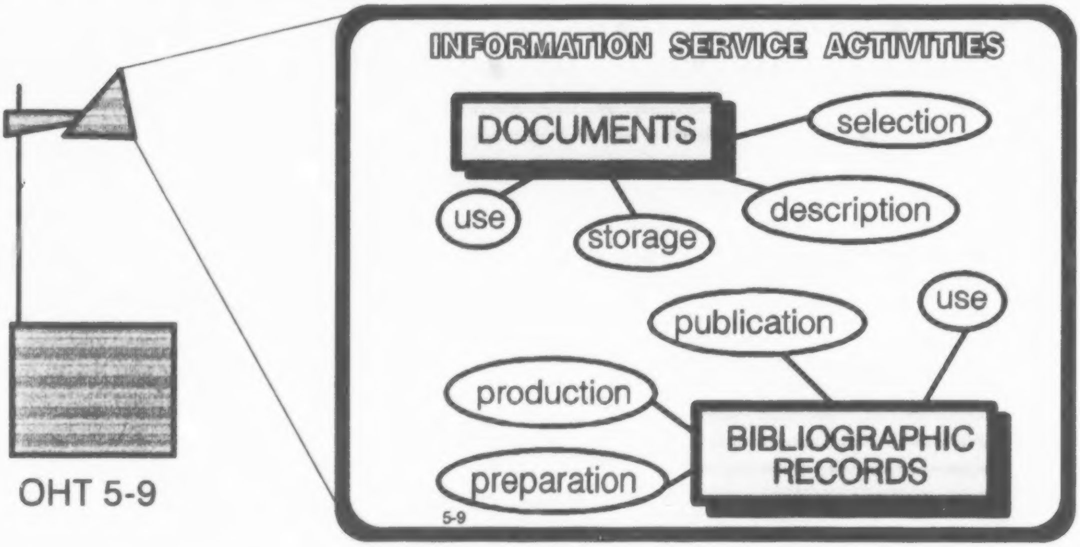
5-8

Compatibility and standards must be applied and maintained consistently. This means that the co-ordinating centre may be involved in many of the activities listed on the overhead transparency

NOTE The instructor may wish to discuss these activities briefly

The co-ordinating centre may also need to consider adjustments in order to co-operate with other information systems using different standards.

OBJECTIVE 4.1. TO DISCUSS COMPATIBILITY WITHIN INFORMATION SYSTEMS IN RELATION TO THE PREPARATION OF BIBLIOGRAPHIC RECORDS


INFORMATION SERVICE ACTIVITIES
DOCUMENTS
selection
use
storage
description
publication
use
production
BIBLIOGRAPHIC RECORDS
preparation
5-9

OHT 5-9

Now we will examine more of the problems of compatibility related to the resource sharing of bibliographic records. In Information Services, the activities connected with the collection, organization and management of documents can be categorized as follows:

- The selection and acquisition of appropriate information materials and their analysis and description.

- Their storage and use.

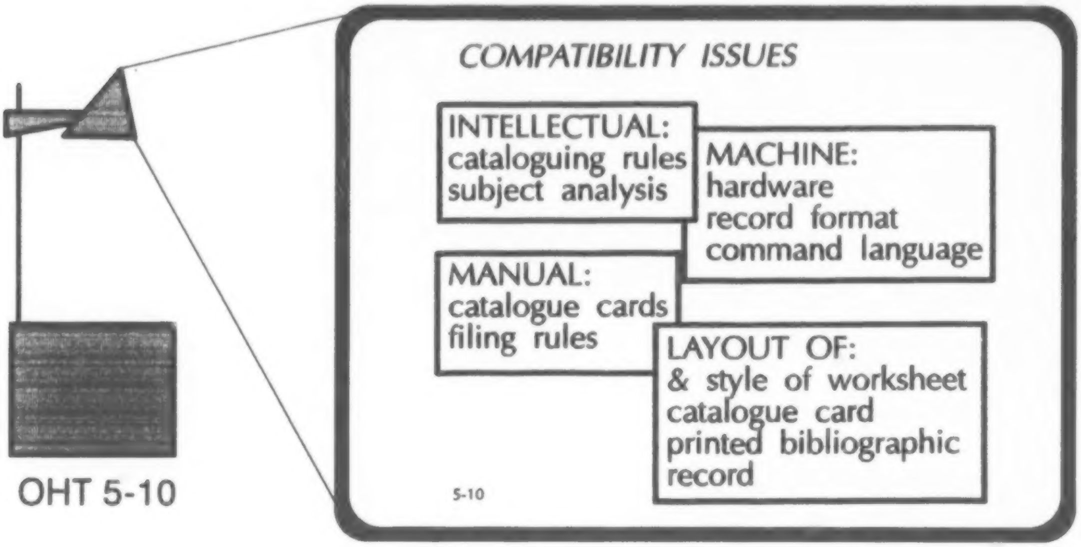
- The preparation, production, publication and use of bibliographic records of these materials to enable them to be used.

OHT 5-9 continued on back...

OHT 5-9 continued

When a number of information services wish to co-operate to form an information system, all these activities must be considered in relation to compatibility.

COMPATIBILITY



OHT 5-10

COMPATIBILITY ISSUES

INTELLECTUAL:
cataloguing rules
subject analysis

MACHINE:
hardware
record format
command language

MANUAL:
catalogue cards
filing rules

LAYOUT OF:
& style of worksheet
catalogue card
printed bibliographic record

5-10

Further issues relating to compatibility are revealed when the bibliographic records activities of an information service are broken down into their component parts. Some of these are listed on the screen.

NOTE The instructor may wish to describe these briefly.

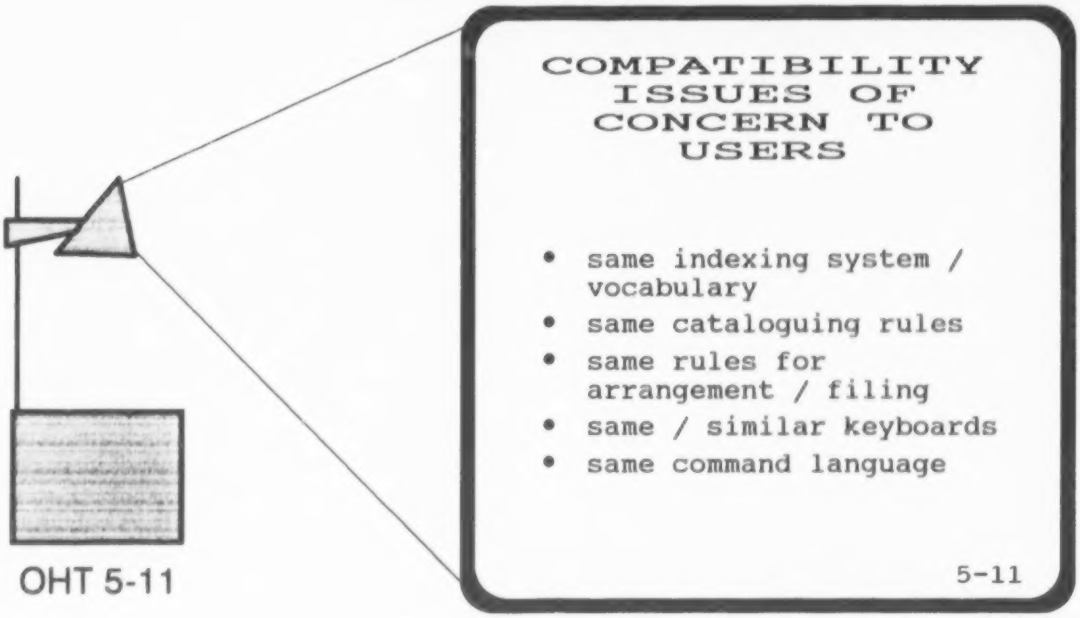
When two or more information services co-operate to form an information system, full compatibility can ONLY be achieved if each service adopts the SAME approach to these processes, equipment and materials. [22]

OHT 5-10 continued on back...

OHT 5-10 continued

Obviously, some of the more tedious aspects of incompatibility and of management in a manual environment can be overcome if the co-operating services adopt the same automated system.

A mutual automated system facilitates the merging, converting, extracting and updating of bibliographic records. It also gives the possibility of other co-operative activities. [23]



COMPATIBILITY ISSUES OF CONCERN TO USERS

- same indexing system / vocabulary
- same cataloguing rules
- same rules for arrangement / filing
- same / similar keyboards
- same command language

5-11

OHT 5-11

If an information system is to achieve it's aim of providing users with a more extensive range of services, it must have compatibility in the intellectual aspects of preparing the bibliographic records of the members of the system. That means the description, cataloguing rules and practices, the subject approach, classification and subject indexing must be the same.

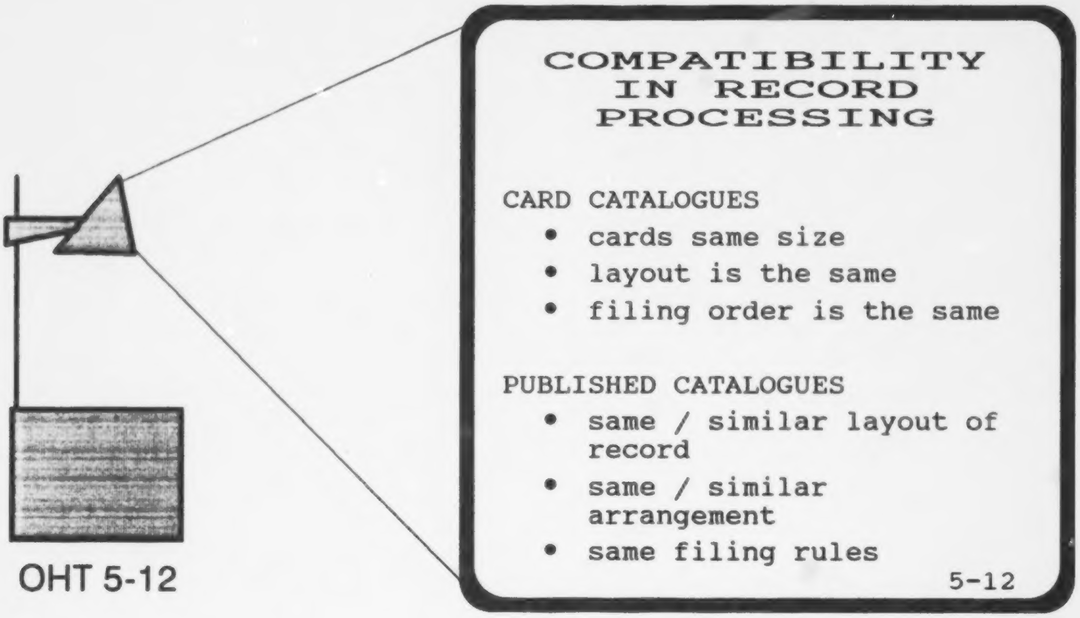
This may initially present the staff of some of the co-operating information services with considerable problems. Processes will need to be changed and new techniques learned. But ultimately it will be to their advantage.

OHT 5-11 continued on back...

OHT 5-11 continued

But the needs of the user must also be considered - for the information service exists to satisfy the needs of the user, not it's staff. Thus it is important that automated systems should be made hospitable to the user's approach. This will include thought being given to the user's needs, such as the use of standardized keyboards and a common enquiry language. Users are best assisted when all the compatibility issues for the whole information system have been resolved.

***NOTE** see Module 6 on Bibliographic Records for further information on the preparation and processing of bibliographic records.*



COMPATIBILITY IN RECORD PROCESSING

CARD CATALOGUES
- cards same size
- layout is the same
- filing order is the same

PUBLISHED CATALOGUES
- same / similar layout of record
- same / similar arrangement
- same filing rules

5-12

OHT 5-12

After the intellectual work of preparing the content of bibliographic records has been undertaken, they are processed. Processing includes arranging the records in a specific order in some form of catalogue. Compatibility in the processing of bibliographic records is as important as in their preparation.

Catalogues appear in various physical forms. The two forms most used world wide are card catalogues and printed catalogues. Printed catalogues may be produced in book form, or may be on microfiche produced by a computer. Or they may simply appear as printed records on a computer screen.

If an information system uses a card catalogue compiled from the input of member services, compatibility can be achieved by each information service using the same sized card, with the same layout. The order in which the cards are filed must also be standardised.

OHT 5-12 continued on back.......

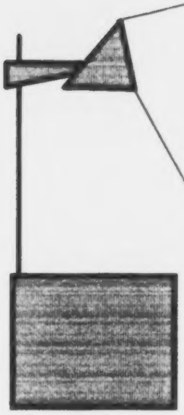
OHT 5-12 continued.

It does not matter greatly whether the cards are typed or printed, duplicated or handwritten. The user of a card catalogue is able to adjust physically and mentally to such differences.

Compatibility in the published listings of bibliographic records should also be ensured. For example, in printed issues of national bibliographies. The same or similar layout of each record must be adhered to by each member service. Capitalization, punctuation, method of arrangement and filing order should follow the same rules.

The way in which the lists are printed does not affect compatibility. They may be duplicated, printed by conventional means or by computer. The final report of the International Congress on National Bibliographies, held in 1977, dealt with standards for printed national bibliographies. Its recommendations, now widely followed, have ensured compatibility among very different national printed catalogues. [24]

OBJECTIVE 4.2. TO DISCUSS COMPATIBILITY WITHIN INFORMATION SYSTEMS IN RELATION TO THE SUBJECT APPROACH



OHT 5-13

COMPATIBILITY IN THE SUBJECT APPROACH - SOME PROBLEMS

- needs of users differ
- broad or specific subject analysis
- different social, political, cultural environments
- different / changing terminology
- differences in languages
- changing relationships of subjects
- new topics and new ideas

5-13

Another major problem in developing information systems is related to the subject approaches used by different information services. Equating the subject approach used within one system, one country, or one specialist subject area, with that of another can be difficult. Some of the difficulties are:

NOTE - the instructor may wish to give examples to aid understanding

- the needs of the general user differ from the needs of the specialist. Some need a broad subject analysis, while others require a very specific analysis.

- differences in social, political, cultural environments affect subject relationships.

- terminology is different. In some areas it is subject to change or development. There are differences in languages and language structures.

OHT 5-13 continued on back....

OHT 5-13 continued.

- the relationships of some subjects to other subjects are changing.

- new topics and new ideas have to be incorporated.

Subject analysis is so individual that even in the same organization people have different approaches. Thus it is one of the most difficult areas in which to achieve compatibility. On the other hand, because it is such an important aspect of resource sharing, studies have been undertaken to try to achieve compatibility, particularly in the machine environment.

Some problems are caused by the different classification schemes, lists of subject headings, and index languages used by information services world-wide. For example, even where a number of co-operating information services use the same classification scheme, compatibility can only be achieved if they all use the same edition of the scheme and have not made individual changes.

OHT 5-14

REQUIREMENTS OF AN INFORMATION SYSTEM IN A MULTI-LINGUAL ENVIRONMENT

- improvement of language teaching
- research into terminology
- terminological banks
- publication of multi-lingual tools
- research into machine translation procedures

5-14

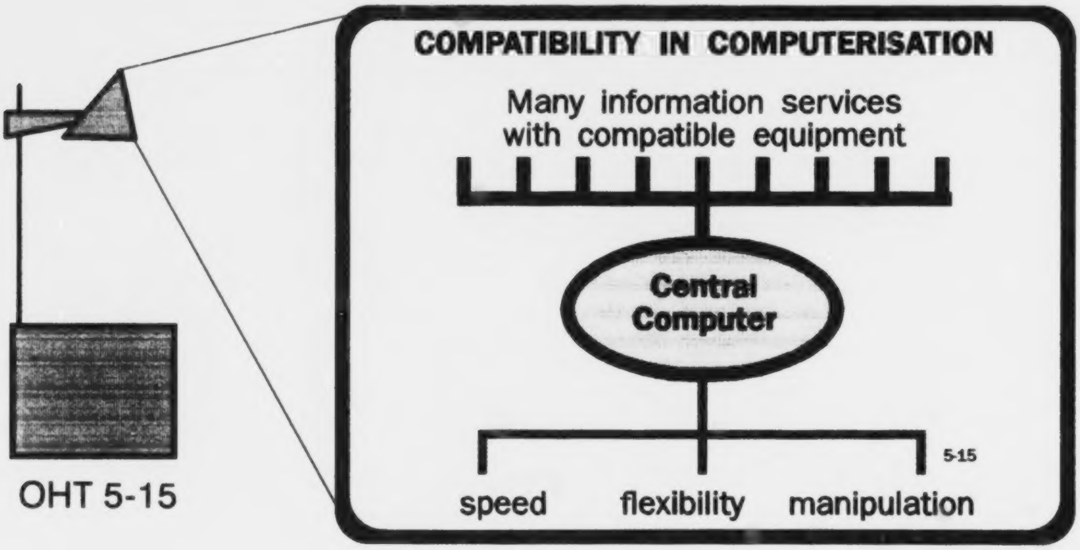
Different languages create other problems. The development of international information systems has been attempted in two ways. One requires the ability to handle the records of publications produced in many languages and to search the system in a variety of languages. An example of such a multi-lingual information system is that of the European Economic Community or EEC for short, where multi-lingualism is mandated by law. This has resulted in attempts to improve language teaching throughout Europe, research into terminology and the development of terminological data-banks. It has led to the publication of multi-lingual glossaries and thesauri, and research into computer translation procedures. INFOTERM, the International Information Centre for Terminology has also contributed greatly to this development.

OHT 5-14 continued on back...

OHT 5-14 continued

Alternatively, as a policy decision for economic reasons, one language can be selected as the carrier for the system. An example of this solution is AGRIS - the International Information System for Agricultural Science and Technology - which uses English as its language.

OBJECTIVE 4.3. TO DISCUSS COMPATIBILITY WITHIN INFORMATION SYSTEMS IN RELATION TO THE COMPUTER ENVIRONMENT



OHT 5-15

COMPATIBILITY IN COMPUTERISATION

Many information services with compatible equipment

Central Computer

speed flexibility manipulation

5-15

Computer technology has greatly increased the possibility of resource sharing. For computerisation allows large sophisticated information systems to be created. Such systems are capable of carrying out a wide range of functions, overcoming wide geographical, linguistic and even subject barriers.

Computers offer speed, flexibility, and the manipulation of enormous numbers of items. However, every aspect of a computerised information system depends upon compatibility and close adherence to standards, if it is to be successful.

When the automation of an information system is planned, compatibility can be ensured by using identical computer technology for the whole system.

OHT 5-15 continued on back....

OHT 5-15 continued.

However, problems can arise when an information system is being created from a number of existing organizations. For some of these may already have developed their own automated systems. If there is no economic possibility of installing new and identical computers throughout all the members of the system, then compatibility can only be achieved by installing an item of electronic equipment called an Interface between the different machines. An Interface allows differing machines to communicate with each other.

COMPATIBILITY

OHT 5-16

PROBLEMS IN COMPATIBILITY OF HARDWARE AND SOFTWARE

- manufacturers - who promote differences
- rapid change in the hardware, falling costs
- high cost and heavy investment in software
- the users - man and machine sometimes incompatible

5-16

Some of the problems in achieving compatibility in hardware and software relate to manufacturers and users.

Computer hardware is compatible only when a computer program running on one machine can be made to run on another. Put another way, two pieces of hardware are compatible if they can work together. Although compatibility can be found between some computer manufacturers, others still make their own incompatible systems. But even such compatibility which exists is short-lived, as technology develops so quickly. Bigger and better computer systems are constantly being developed at lower prices than the smaller machines of yesterday.

OHT 5-16 continued on back.....

OHT 5-16 continued.

Many computer programs are very expensive. Compatibility in computer software is concerned either with the ease with which software prepared in one programming language or for one machine can be translated for use in other machines. Or whether the program can be used as it stands on another machine.

This is important to an information service which may already have a sizable collection of computer software. Yet when joining an information system it may have to change its computer system to another.

As computerized information systems develop in size, complexity and sophistication, it is increasingly important to pay attention to the needs of its users. It is vital that modern systems are user-friendly. They must take into account the user's physical requirements as well as their reactions to images on the display screen, methods of interrogating the computer, and the command language used.

With information systems taking on an international role it is vital that the user sees the information displayed in their own language correctly. Therefore the computer must be able to reproduce the special letters and characters used by different languages - known as character sets.

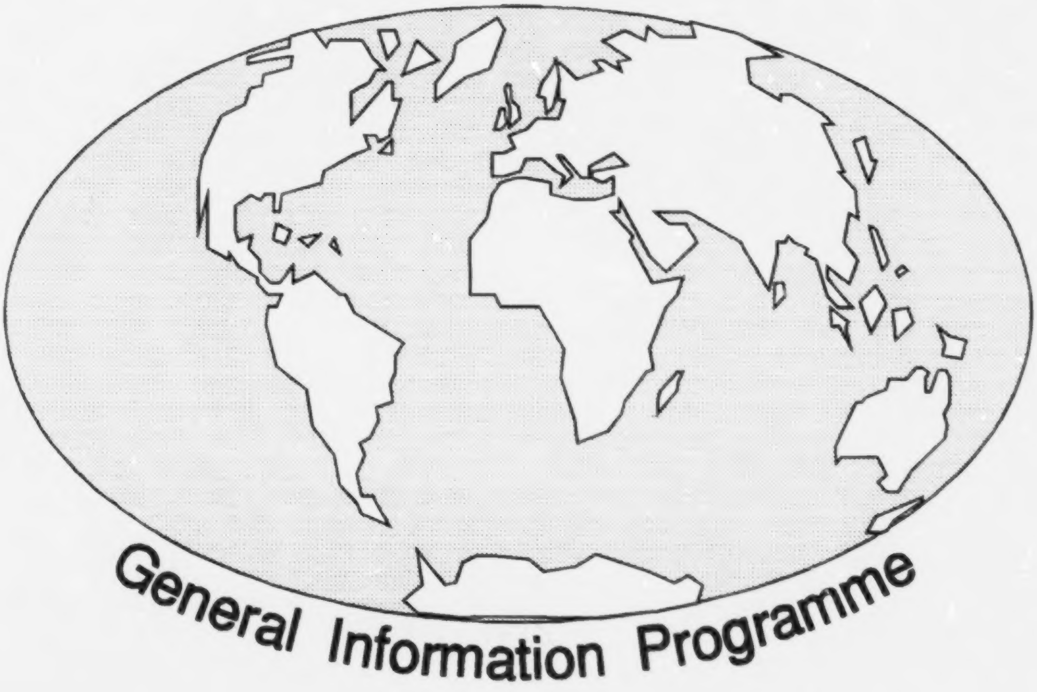
PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 5

Overhead transparency master copies

Photocopy onto plastic sheets approved by the Photocopier Manufacturer ONLY. Copies should be the same size as the originals, with at least a one centimetre margin all round.



COMPATIBILITY AND INFORMATION SYSTEMS

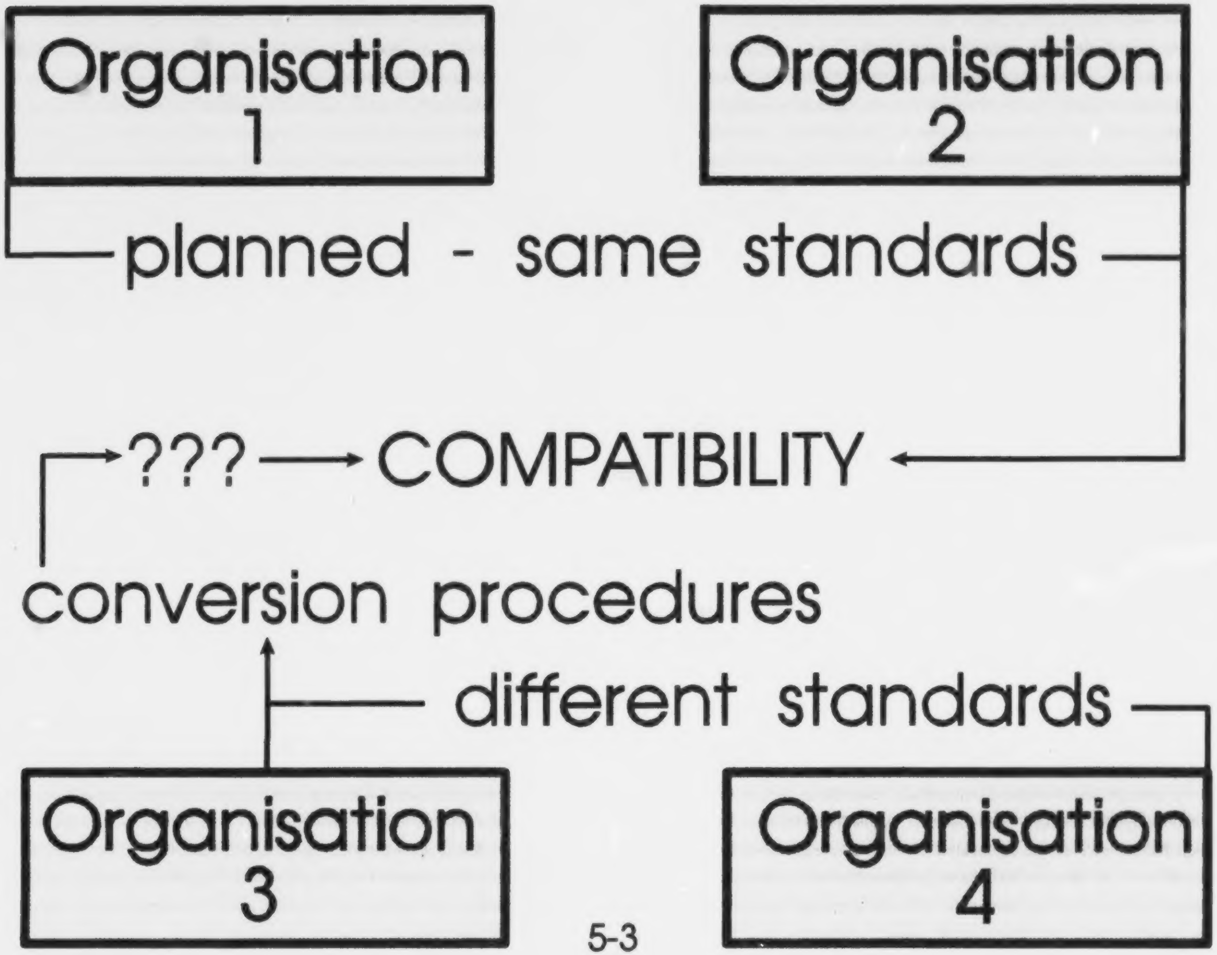
- What is compatibility?
- Compatibility and standardization
- Identify compatibility issues
- Compatibility of information:-
    - in preparing & processing bibliographic records
    - in the subject approach
    - in the computer environment

WHAT IS MEANT BY COMPATIBILITY?

able to exist
together
harmoniously

capable of
being used
together
without
modification
or
adaptation

STANDARDISATION AND COMPATIBILITY



Organisation 1

Organisation 2

planned - same standards

??? → COMPATIBILITY

conversion procedures

different standards

Organisation 3

Organisation 4

COMPATIBILITY IN RELATION TO RESOURCE SHARING

- Resource sharing concerned with 'records'
- Resource sharing facilitated by computer processing

BUT WITHOUT COMPATIBILITY

- Computer processing not efficient
- Resource sharing not economical

GROUPS INVOLVED WITH INFORMATION / SYSTEMS

PRODUCERS:
authors &
publishers

USERS:
researchers,
readers

DISTRIBUTORS:
information
services

COMPUTER PROCESSING OF TEXTS REQUIRES COMPATIBILITY FOR:-

○ standard coding from publishers

○ standards for bibliographic references

○ standards for transliteration

○ standards in terminology

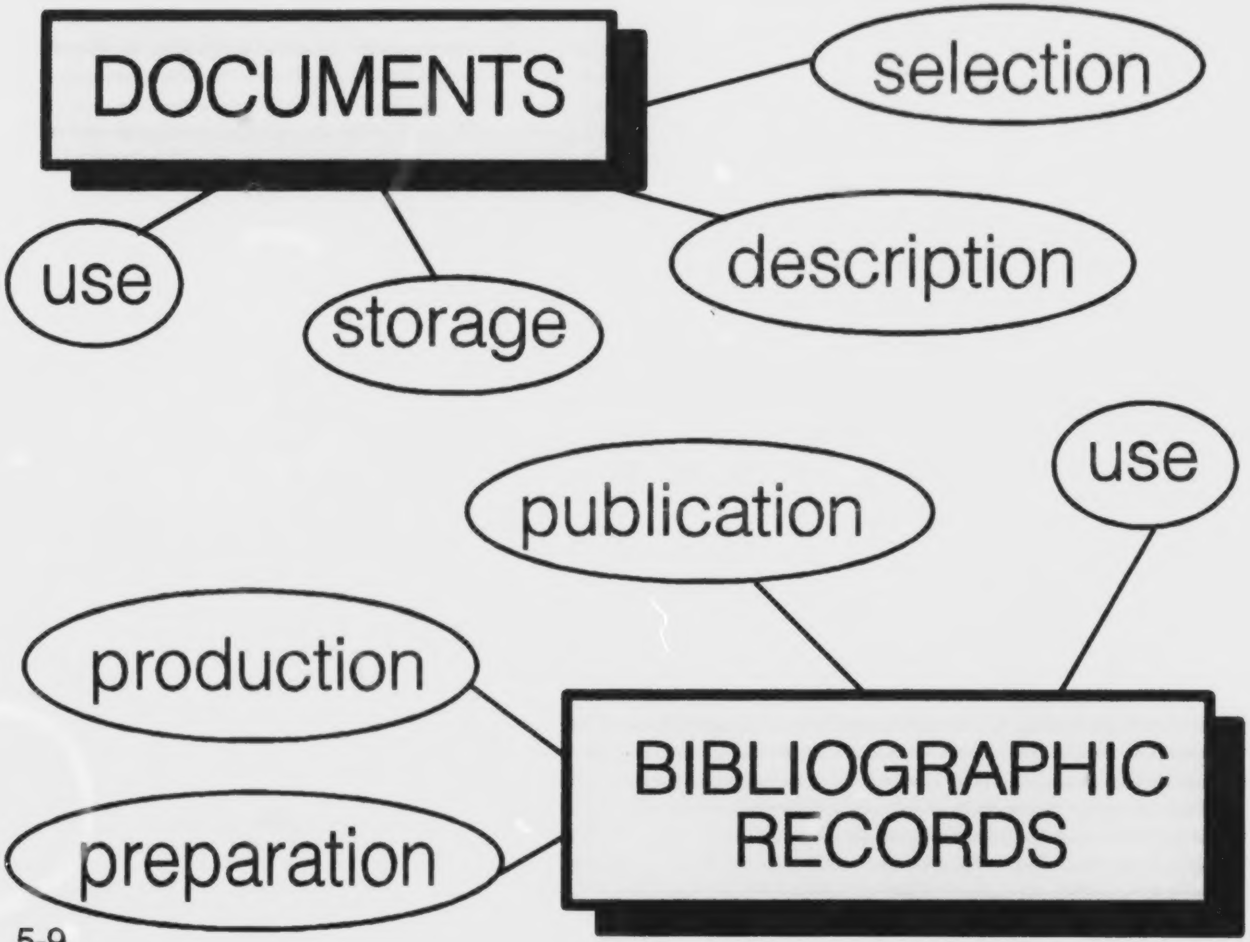
STANDARDS AND STANDARD PRACTICES REQUIRED WITHIN A SYSTEM

- List of subject headings
- Guidelines for bibliographic description
- Standard worksheet for input of records
- Specifications for physical recording formats, bibliographic record formats, character sets.

RESPONSIBILITIES OF CO-ORDINATING CENTRE

- ○ co-ordinate member's activities
- ○ maintain policy, standards, practices
- ○ monitor input
- ○ train member's staff
- ○ provide technical assistance
- ○ maintain data-base of system
- ○ publish its products
- ○ provide information
- ○ liaise with other information systems

INFORMATION SERVICE ACTIVITIES


DOCUMENTS
selection
use
storage
description
publication
use
production
preparation
BIBLIOGRAPHIC RECORDS

5-9

COMPATIBILITY ISSUES

INTELLECTUAL:
cataloguing rules
subject analysis

MACHINE:
hardware
record format
command language

MANUAL:
catalogue cards
filing rules

LAYOUT OF:
& style of worksheet
catalogue card
printed bibliographic
record

COMPATIBILITY ISSUES OF CONCERN TO USERS

- same indexing system/ vocabulary
- same cataloguing rules
- same rules for arrangement/ filing
- same/similar keyboards
- same command language

COMPATIBILITY IN RECORD PROCESSING

CARD CATALOGUES

- cards same size
- layout is the same
- filing order is the same

PUBLISHED CATALOGUES

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- same filing rules

COMPATIBILITY IN THE SUBJECT APPROACH - SOME PROBLEMS

- Needs of users differ
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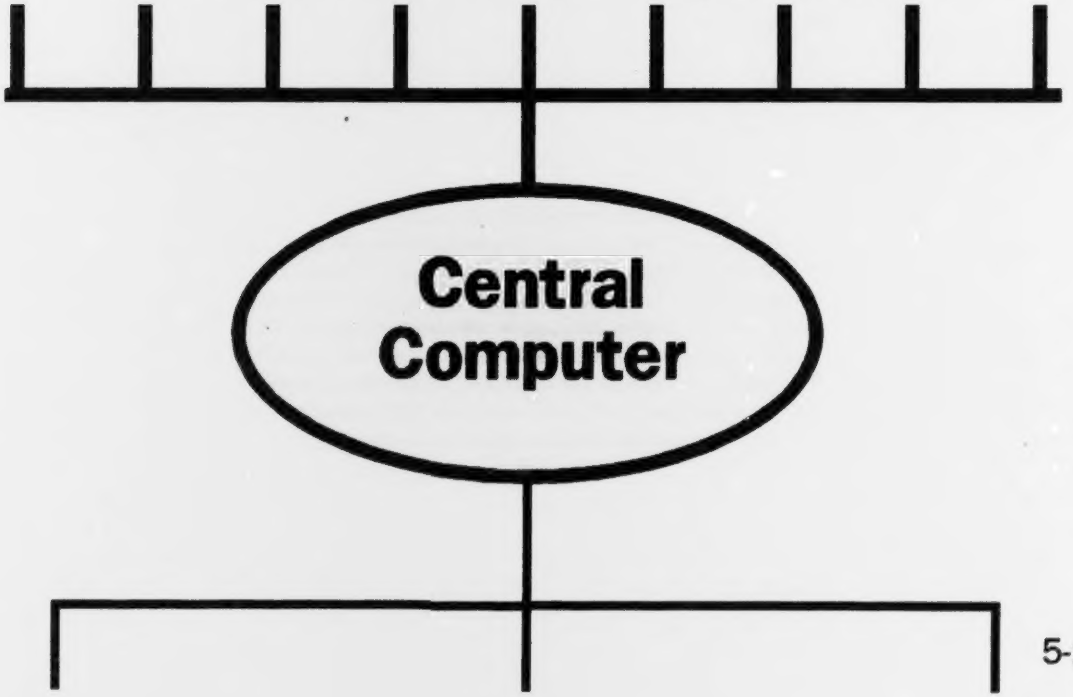
- Different social, political, cultural environments
- Different/changing terminology
- Differences in languages
- Changing relationships of subjects
- New topics and new ideas

REQUIREMENTS OF AN INFORMATION SYSTEM IN A MULTI-LINGUAL ENVIRONMENT

- improvement of language teaching
- research into terminology
- terminological banks
- publication of multi-lingual tools
- research into machine translation procedures

COMPATIBILITY IN COMPUTERISATION



Many information services
with compatible equipment

Central
Computer

speed

flexibility

manipulation

PROBLEMS IN COMPATIBILITY OF HARDWARE AND SOFTWARE

MANUFACTURERS
who promote
differences

RAPID CHANGE
in the hardware,
falling costs

SOFTWARE
high cost and
heavy investment

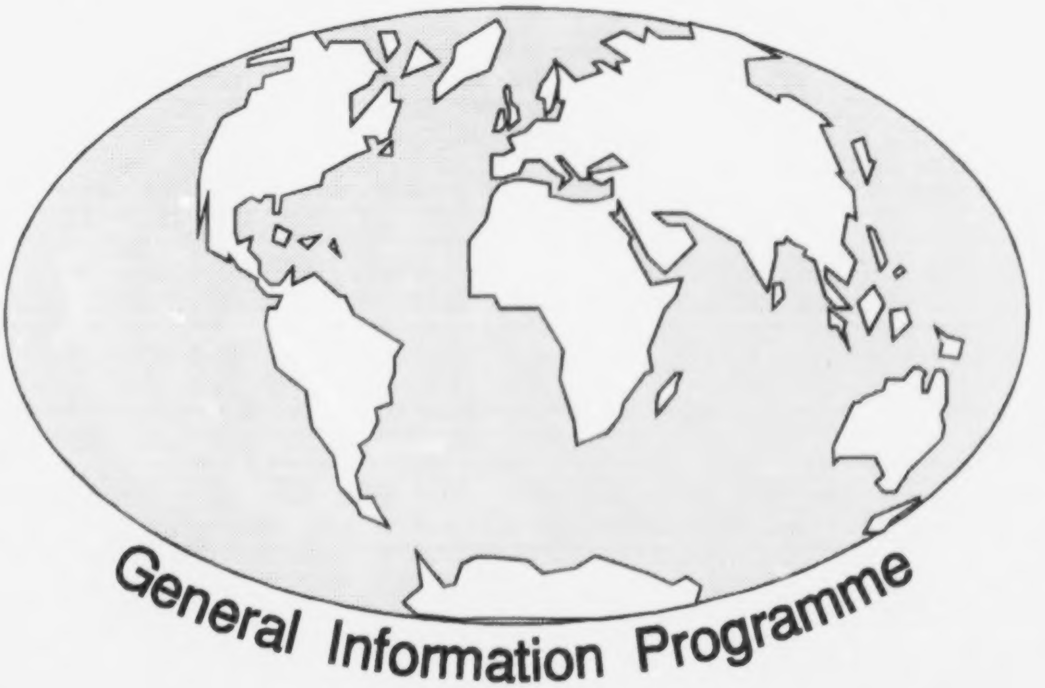
USERS
man and machine
sometimes
incompatible

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 6

Compatibility in the preparation and presentation of standardised bibliographic records


General Information Programme

INSTRUCTORS

PLEASE read **Module 0 - General Introduction to the Teaching Package,** before using this Module. It contains recommendations on how to use the Programme most effectively.

MODULE 0 also contains:

- A list of **ACRONYMS** giving the full titles of organisations referred to in this Teaching Package.
- A **BIBLIOGRAPHY** of documents referred to. These are followed by a [number] in the Module - full details are given in numerical order in the Bibliography.
- **ADDRESSES** of some major organisations denoted by a [letter] in the Module, are listed at the end of the BIBLIOGRAPHY.
- A **GLOSSARY** of computing terminology.

INTRODUCTION TO MODULE 6

Module 5 has introduced the concept of Compatibility in information handling in general. Module 6 is NOT intended to be given immediately after Module 5, but will be of value at both undergraduate and graduate levels at a later stage as it considers the concept of compatibility specifically in the context of bibliographic records. It is therefore recommended that Module 6 is given as the final session in the first section of a course on aspects of bibliographic record production, prior to the introduction of the computerisation of bibliographic records. It can then be followed by Module 7.

With Module 5, on the Concept of Compatibility, it can be used as part of a short course either for participants with a library and information science background whose organisations are joining an information system with shared resources, or as part of a course for editors and publishers who need to know what information is required for the proper identification of records.

It consists of a brief introduction and four objectives relating to the international compatibility of bibliographic records.

This Module does not set out to be a comprehensive course on the production of bibliographic records. It aims to make students who already have this knowledge aware of the benefits and the need for compatible or standardised records.

TIMING

AS A LECTURE

Given as it stands, this Module will last approximately 50 minutes.

Introduction continued on back...

Introduction to Module 6 continued.

AS A SEMINAR

This Module should last for approximately 2 hours.

AIM

To provide background knowledge about national and international compatible and standardised bibliographic records to those involved in their creation.

OBJECTIVES

To give:-

1. an international and historical background to those who will be creating records for information systems or using records created by other organizations
2. a rationale for making bibliographic records in accordance with international standards and standard practices
3. an introduction to international information systems
4. a description of the responsibilities of the national bibliographic agency in the international information community.

BACKGROUND READING

The following book gives further useful information on this and the next module.

Hagler. *The bibliographic record and information technology.* [25]

IT IS RECOMMENDED THAT:

IN SEMINARS AND SHORT COURSES Instructors should give a copy of the Bibliography in Module 0 to all participants. The Bibliography can have further items added to it as appropriate.

IN LECTURES IN A LIBRARY AND INFORMATION SCIENCE SCHOOL, participants should be made aware of where they can obtain a copy of the Bibliography for further study.

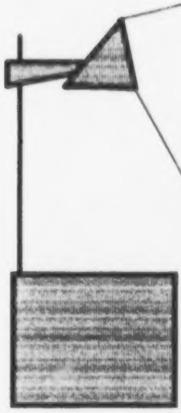
METHODS OF PRESENTATION

The Teaching Notes which follow can be used in two ways. EITHER the Instructor can read them aloud, whilst projecting the accompanying OVERHEAD TRANSPARENCIES. OR they can form the basis of the Instructor's own presentation to which additional materials and overhead transparencies can be added where appropriate.

Type in **Bold** or *Italic* is for the information of the Instructor only and should not be read aloud.

TEACHING NOTES

OBJECTIVE 1. TO GIVE AN INTERNATIONAL AND HISTORICAL BACKGROUND



OHT 6-1

COMPATIBLE BIBLIOGRAPHIC RECORDS

1. Introduction
2. Standards and rules
3. Different physical forms
4. International standards and practices
5. International standard identification numbers
6. Subject content
7. Cataloguing-in-publication

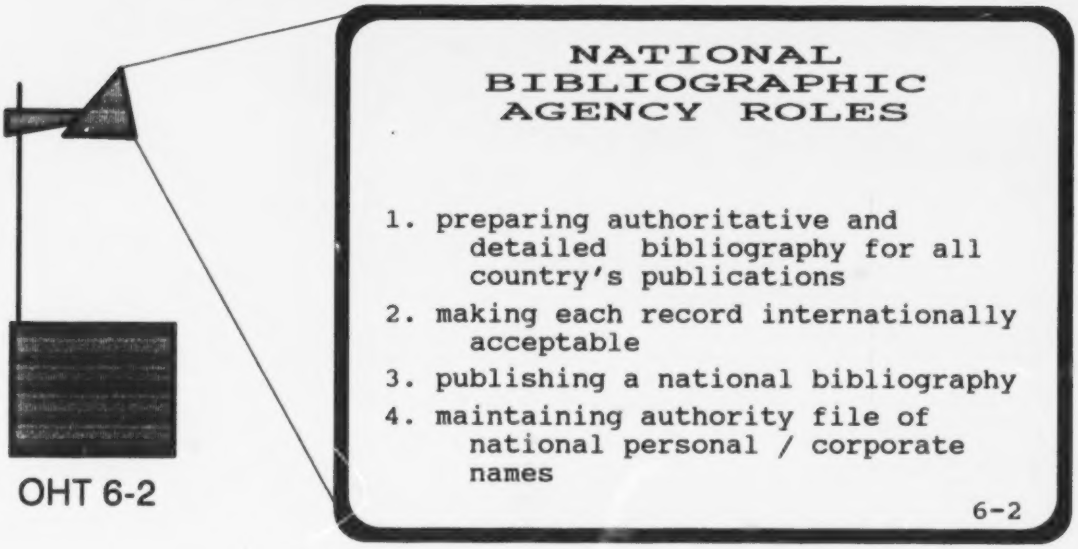
6-1

This session aims to give you a background knowledge of national and international compatible and standardised bibliographic records. To achieve this we need to examine the topics on the overhead transparency.

For simplicity, the term 'information service' is used to describe any library, documentation centre, information office, media resources unit, or other similar organisation.

The term 'information system' refers to a group of information services who co-operate in resource sharing activities.

INTRODUCTION



OHT 6-2

NATIONAL BIBLIOGRAPHIC AGENCY ROLES

1. preparing authoritative and detailed bibliography for all country's publications
2. making each record internationally acceptable
3. publishing a national bibliography
4. maintaining authority file of national personal / corporate names

6-2

Since the last century, librarians have spent much time trying to define exactly how to prepare effective bibliographic records and catalogues. With the development of national and international information systems, and the increasing use of computers, the process has gained new momentum.

Most countries now have a national bibliographic agency. This is an organizational unit established within a country's library and information service. It normally has responsibility for a number of roles.

These include preparing the authoritative and comprehensive bibliographic record for each new publication issued in the country. This will involve close cooperation with the National Library of the country - and access to all publications received as a result of the country's copyright or legal deposit legislation.

OHT 6-2 continued on back....

OHT 6-2 continued.

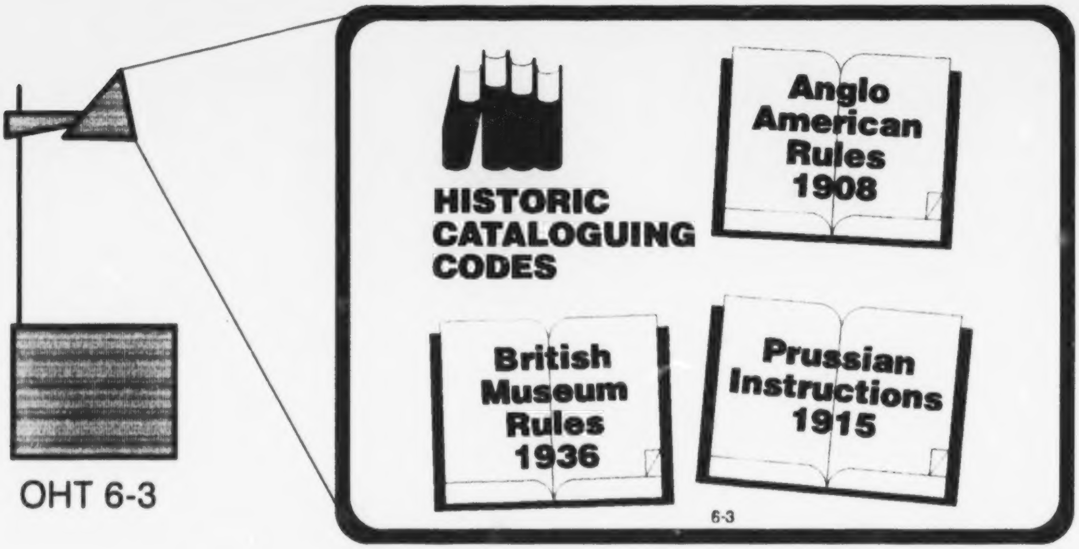
Making each record in accordance with accepted international bibliographic standards.

Publishing those records as soon as possible in a national bibliography.

Including in each record as much identifying detail as can be found in the publication itself. In some cases it may be necessary to add to this by bibliographical and biographical research.

This detail is necessary if the record is to fulfil the major objectives of a catalogue. These were defined and agreed at the International Conference on Cataloguing Principles, held in Paris in 1961. [26]

The fourth role on the transparency will be dealt with later in this session.


HISTORIC CATALOGUING CODES
Anglo American Rules 1908
British Museum Rules 1936
Prussian Instructions 1915
6-3

OHT 6-3

All cataloguers have to be accurate and consistent. To ensure this, rules are drawn up, agreed upon and followed. Some of the best known and important of these rules date back to the last century. Often designed for use in a particularly large and important library, they were adopted in other libraries as well. Three such cataloguing codes are shown on the overhead transparency. [27, 28, 29]

NOTE The full titles of these Codes are given below and can be given if Instructors wish to do so.

AA Rules - Cataloguing rules, compiled by Committees of the Library Association / American Library Association. 1908

BM Rules - Rules for compiling the catalogues of printed books, maps and music in the British Museum. Rev. edn. 1936

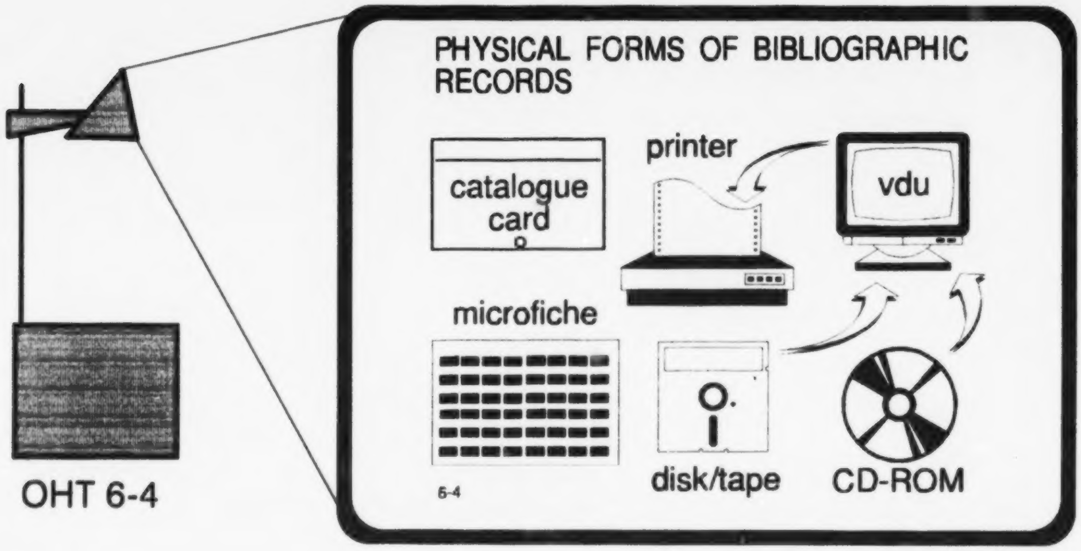
Prussian Instructions - Instruktionen fuer die alphabetischen Kataloge der Preussischen Bibliotheken. 1915

OHT 6-3 continued on back...

OHT 6-3 continued.

For a long time, however, it has been an objective of librarians to find a way by which bibliographic records could be prepared once only. This would involve one agency or library preparing such records and then exchanging them or re-using them in other libraries. Such libraries might be part of a limited circle, such as branches of a public library system, or could extend to a total national library system. This is a basic form of resource sharing. It would avoid the need for many cataloguers having to do the same work, sometimes in slightly different ways, in many different libraries.

Resource sharing led to the creation of networks or information systems. The success of such a form of resource sharing depends upon the development of standards and rules for the preparation of bibliographic records. These should be accepted and followed by all participants in the information system.



OHT 6-4

PHYSICAL FORMS OF BIBLIOGRAPHIC RECORDS

In this and other sessions, it has been emphasized that particularly at national level, the way in which bibliographic records are compiled should follow international standards and standard practices.

However, the amount of information included in a bibliographic record and the physical form in which the record is provided, can vary. This will depend upon the resources of an individual information service or system, its functions, and its needs.

Traditional ways of producing bibliographic records involve catalogue cards, used in many countries. On the card the record is set out in a standard and formal display. International standards now exist for both the size of the card and for the physical catalogues in which the cards are made available. [8, 9]

OHT 6-4 continued on back.....

OHT 6-4 continued.

Some organizations produce and sell complete bibliographic records in a standardised form, on catalogue cards.

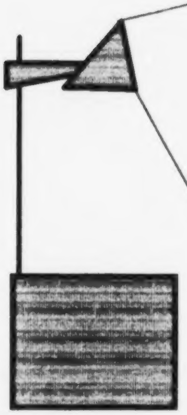
In many libraries today, bibliographic records can be found in other physical forms. These include images on a video screen generated from an on-line computer, machine readable tapes, disks, or CD-Rom. They can also be listed on microfilm, microfiche or computer printout.

These new physical forms provide much more flexibility for the cataloguer, and even more to the user. As more computerisation is applied, it is anticipated that the traditional style and layout of bibliographic records may no longer be needed.

But whatever the physical form, and the order and amount of the data elements on the record, it is essential that standards are maintained.

In the past twenty-five years major efforts have been made to ensure that bibliographic records can be exchanged and used internationally. This has been the basis of the programme of Universal Bibliographic Control.

OBJECTIVE 2. MAKING BIBLIOGRAPHIC RECORDS IN ACCORDANCE WITH INTERNATIONAL STANDARDS AND STANDARD PRACTICES



OHT 6-5

UNIVERSAL BIBLIOGRAPHIC CONTROL [UBC]

A Unesco / IFLA international programme:

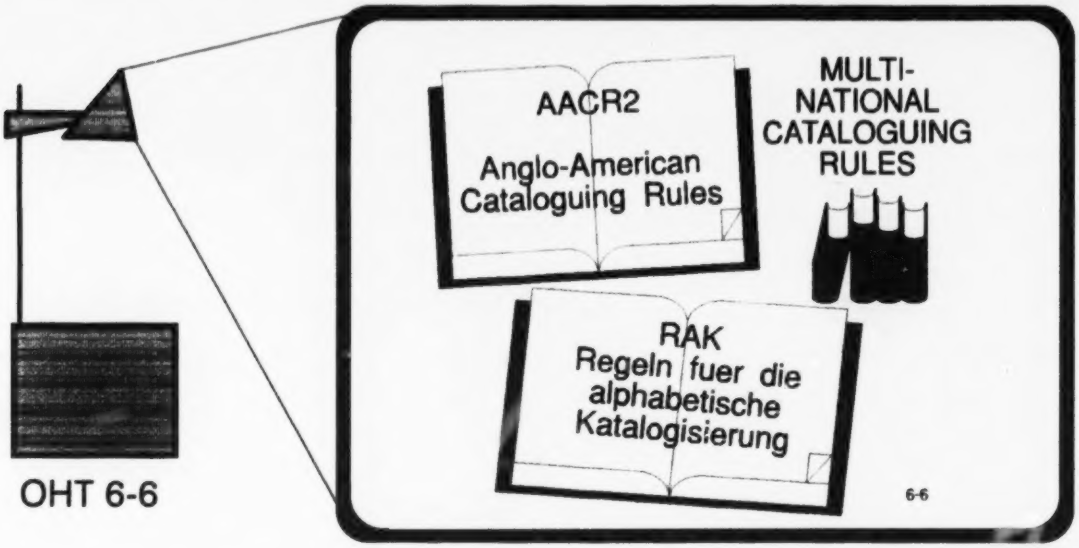
1. to enable prompt exchange of bib. records
2. to ensure international acceptability

Each country to record its own publications to international standards

6-5

Universal Bibliographic Control, or UBC, is a UNESCO/IFLA programme to develop a world-wide system for the control and exchange of bibliographic information. It aims to make bibliographic information on publications issued in all countries universally and promptly available, and in a form which is internationally acceptable. [30] [D]

Basic to the UBC programme is the recognition that each country is best qualified to identify and record the publications of its national authors. Essential to the programme is the acceptance by all countries of international standards for making bibliographic records.


AACR2
Anglo-American Cataloguing Rules
MULTI-NATIONAL CATALOGUING RULES
RAK
Regeln fuer die alphabetische Katalogisierung
6-6

OHT 6-6

Much activity has been devoted in recent years to developing the required international bibliographic standards. In some areas considerable progress has been made. Although there is no single international cataloguing code, there are a number of codes now used in more than one country. These have been drawn up by committees which include representatives from several countries. [27, 31]

NOTE - Instructors may give the full titles of the Codes if they wish to do so.

AACR2 - Anglo-American Cataloguing Rules. Prepared by the American Library Association, the British Library, the Canadian Committee on Cataloguing, the Library Association, the Library of Congress.

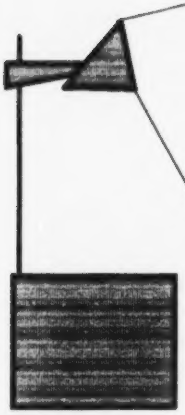
RAK - Regeln fuer die alphabetischen Katalogisierung. Prepared by a committee of Austrian, German and Swiss cataloguers.

Of the multi-national cataloguing codes, AACR2 is the most widely used. It is used in countries as different as Korea and New Zealand, Singapore and The Gambia. Written in English, it has been translated into Arabic, Chinese, Finnish, French, Italian, Japanese, and several other languages.

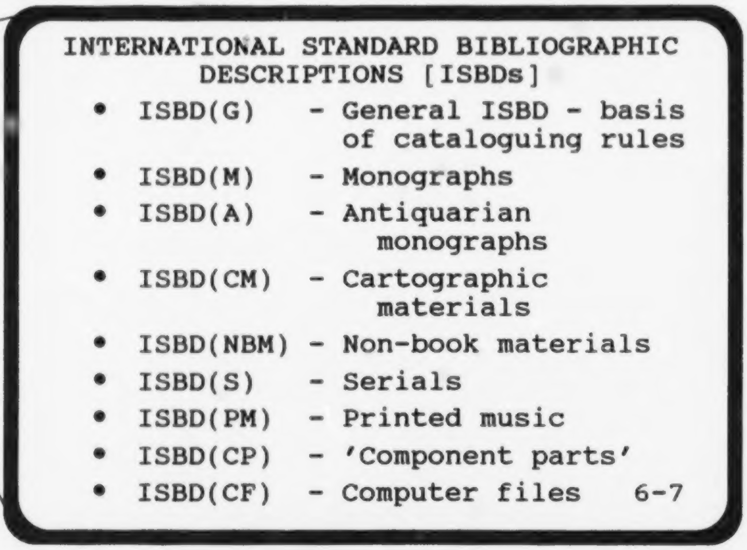
6-6 continued on back...

OHT 6-6 continued

AACR2, RAK and many other national codes, are all based on the same principles. They follow the same rules for the bibliographic description of all kinds of materials, known as ISBDs, or International Standard Bibliographic Descriptions. [32]



OHT 6-7



INTERNATIONAL STANDARD BIBLIOGRAPHIC DESCRIPTIONS [ISBDs]

- ISBD(G) - General ISBD - basis of cataloguing rules
- ISBD(M) - Monographs
- ISBD(A) - Antiquarian monographs
- ISBD(CM) - Cartographic materials
- ISBD(NBM) - Non-book materials
- ISBD(S) - Serials
- ISBD(PM) - Printed music
- ISBD(CP) - 'Component parts'
- ISBD(CF) - Computer files

6-7

With IFLA as the driving force, international agreement on standards for the physical description of information materials was reached with the development of the ISBDs. [32 - 40]

ISBDs were developed to ensure that bibliographic records produced by different sources could be interchanged internationally. ISBDs also assist in the interpretation of bibliographic records in different languages and in their conversion to machine readable form.

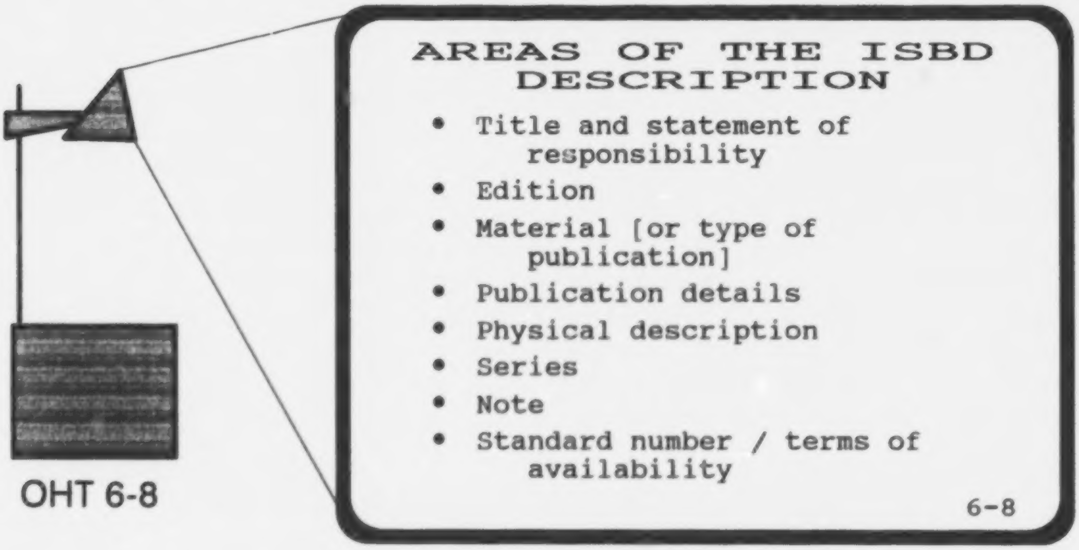
ISBDs have been incorporated into all the national and multi-national cataloguing codes now in use. All use the general ISBD(G), as the basis for their cataloguing rules. They also include the specialist ISBDs covering the various formats in which information materials appear. These are shown on the overhead transparency.

OHT 6-7 continued on back...

OHT 6-7 continued.

New and revised editions of the ISBDs, are continuously being published by IFLA. These incorporate amendments and improvements developed as a result of their international use. [41]

It must be emphasized that ISBDs are only concerned with a description of the information material itself. That description is based on information found in the item or publication. Unlike some other bibliographic records, an ISBD description does not include information about the subject content of the item, or its classification within any particular scheme. It does not deal with subject headings and cannot deal with the location of the item within any information service collection.



OHT 6-8

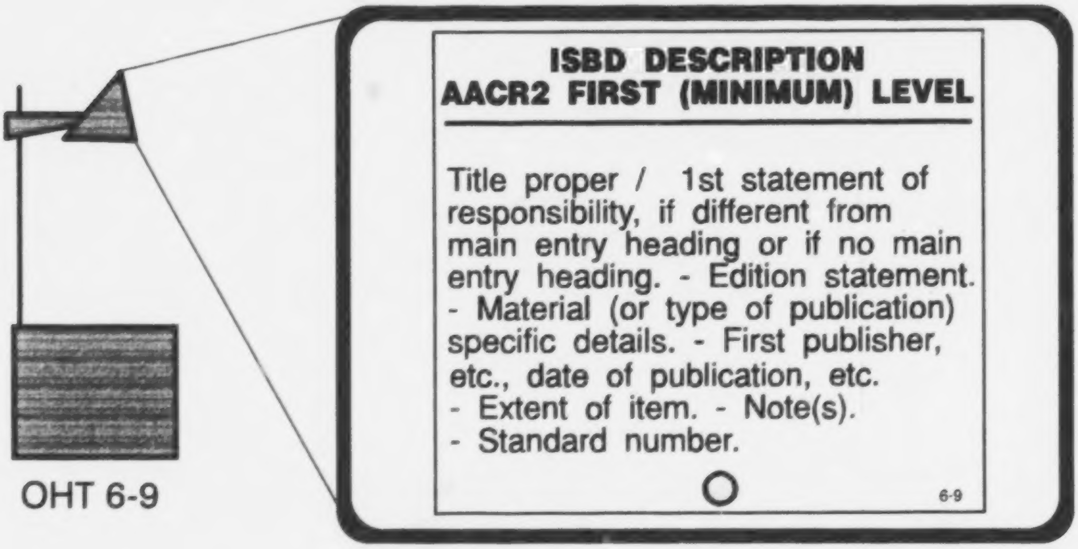
AREAS OF THE ISBD DESCRIPTION

- Title and statement of responsibility
- Edition
- Material [or type of publication]
- Publication details
- Physical description
- Series
- Note
- Standard number / terms of availability

6-8

Every ISBD has a common structure or pattern. The ISBD description is divided into areas relating to particular types of information, as shown on the overhead transparency. Within each area a number of elements are grouped.

An item's bibliographic description is based on the fixed order of both the areas and the elements within those areas. Special kinds of punctuation precede the areas and elements. These can easily be recognized and identify the next area or element.



OHT 6-9

ISBD DESCRIPTION
AACR2 FIRST (MINIMUM) LEVEL

Title proper / 1st statement of responsibility, if different from main entry heading or if no main entry heading. - Edition statement.
- Material (or type of publication) specific details. - First publisher, etc., date of publication, etc.
- Extent of item. - Note(s).
- Standard number.

6-9

The framework of each ISBD allows the amount of detailed information used to describe the item, to be varied according to need. For example, the maximum amount of information would be given by a national bibliographic agency.

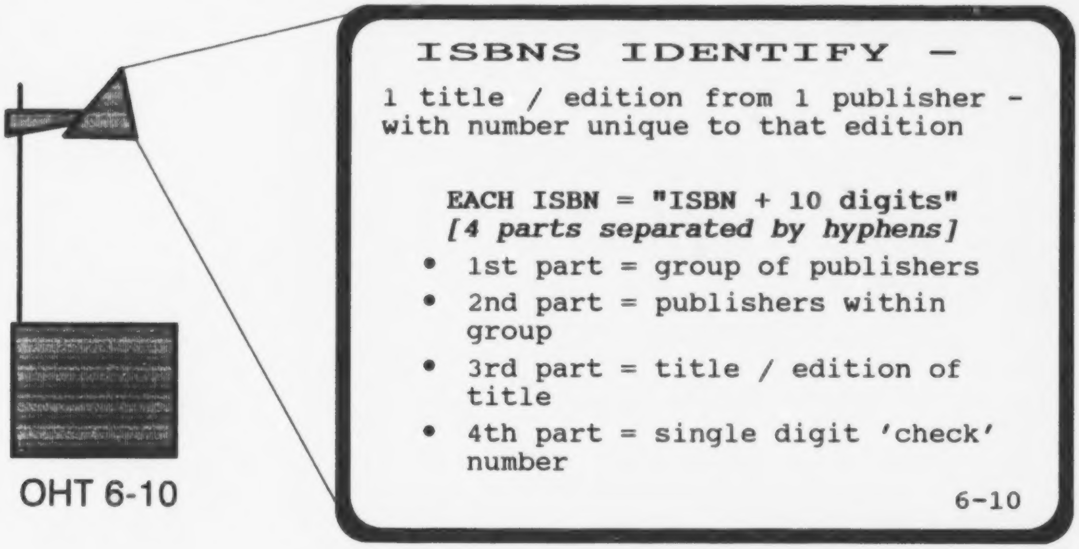
Other information services may not need such a detailed description. They can select the areas and elements they need. An example of the minimum level, or a first level AACR2 ISBD description, is given on the overhead transparency.

OHT 6-9 continued on back...

OHT 6-9 continued

Providing the cataloguer adheres to the ISBD order of areas and elements, and the prescribed punctuation, it is still an ISBD description. But even when making less detailed records, it is important to include as many elements as necessary to identify and describe the publication adequately.

OBJECTIVE 3. AN INTRODUCTION TO INTERNATIONAL INFORMATION SYSTEMS.



OHT 6-10

ISBNS IDENTIFY –

1 title / edition from 1 publisher - with number unique to that edition

EACH ISBN = "ISBN + 10 digits"
[4 parts separated by hyphens]

- 1st part = group of publishers
- 2nd part = publishers within group
- 3rd part = title / edition of title
- 4th part = single digit 'check' number

6-10

At the same time as international bibliographic standards were developed, international numbering schemes came into use. Their main role was to provide an efficient bibliographic control tool for different types of published material. Put another way, each item carries its own unique number to identify it, like a car registration number.

Two of these systems especially relate to the materials found in information services and are used in the preparation of bibliographic records. These are the International Standard Book Number, or ISBN, and the International Standard Serial Number or ISSN. Normally, ISBNs and ISSNs are printed on the books or serials.

344

OHT 6-10 continued on back....

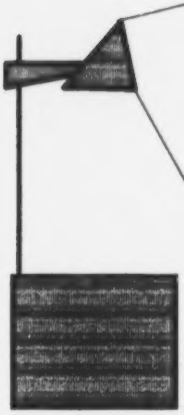
OHT 6-10 continued.

These two numbers are then used in ISBDs as essential elements in the physical description of bibliographic records. Although first developed by publishers, they are now widely used in information services as a bibliographic control tool.

The International ISBN Agency controls and promotes the system, publishes a Users Manual and a journal, and other reports. [42][H]

In individual countries the scheme is maintained by national agencies which can be established by publishers associations and by national libraries. It operates in accordance with International Standard ISO 2108. [43]

ISBNs consist of the letters ISBN followed by 10 numbers. The numbers are divided into four parts by hyphens. The first part identifies a group of publishers - such as publishers from a particular country. The second part of the number identifies the publisher within that group, who published the material. The third part identifies the title or the edition of a title published by that particular publisher. The fourth part, a single digit, is simply a 'check' number.



OHT 6-11

INTERNATIONAL STANDARD BOOK NUMBERS - two examples

Publisher: [British] Library Association. English language monograph published in two editions, hardback and paperback

ISBN 0-85365-631-2 (boards)

ISBN 0-85365-721-1 (paperback)

Publisher: Nigerian, new. Monograph.

ISBN 978-138-001-2

6-11

Here are two examples of ISBNs so that we can see how they are created.

In the first example, an English language monograph, the ISBN is made up as follows:

0 is the group identifier, that is PUBLISHERS IN THE ENGLISH LANGUAGE.
85365 identifies the publisher, the Library Association.
631 identifies the hardback edition of the title.
And 2 is the check digit.
721 identifies the paperback edition of the title, 1 being the check digit.

The second example on the transparency is a Nigerian monograph from a new publisher:

978 identifies PUBLISHERS IN NIGERIA.
138 identifies the publisher, 'International Publications, Ibadan'
001 Identifies the title as the first publication produced by this publisher. 2 is the check digit.

OHT 6-11 continued on back...

OHT 6-11 continued.

In the first example on the overhead transparency, the first part of the ISBN - 0 - identifies a group of publishers in a particular language, not the publishers of a individual country, as in the Nigerian example. There are a number of these large group identification numbers. They include:

0 for English language publications (this includes USA, UK, Canada, etc.),
2 for French language publications (including those coming from Canada),
3 for German language publications, and
92 for publications of international organizations (including UN, Unesco).

The ISBN should appear clearly in the publication itself, usually on the back of the title page, close to the copyright symbol. Publishers are now using ISBNs for developing machine-readable codes to keep account of sales. These may be found on the back of the dust cover of hardbacks and on the back cover of paperbacks, in the form of bar-coded labels.

The use of the ISBN system is continually being extended world-wide: recent countries using ISBNs include Papua New Guinea, China and parts of Latin America. It is being used in information services and systems as a control number for legal deposit, and in union catalogues. Despite minor problems, there are considerable advantages in including the ISBN as an essential element in a bibliographic record.

OHT 6-12

INTERNATIONAL SERIALS DATA SYSTEM

—

Purpose of the ISDS

- world-wide identification of serials through bibliographic control using ISSN's
- maintenance of an international register of serials

6-12

The International Standard Serial Number, or ISSN, forms the basis of the International Serials Data System, or ISDS. ISDS was formally established in 1971. It operates through a world-wide network of national centres linked to the ISDS International Centre in Paris. [21][G]

ISDS sets out to establish bibliographic control of serial publications world-wide. It maintains an international register of serials.

Similar to the ISBN, the ISSN consists of the letters ISSN followed by 8 digits in 2 blocks of 4, separated by a hyphen. The last digit is a check number. It is usually printed in each issue of a serial in the top right corner of the front cover. ISSNs operate in accordance with ISO 3297. [44]

OHT 6-13

EXAMPLES OF KEY TITLES AND ISSNs

[Inseparably linked and unique]

Scientific American = ISSN 0036-8733
Bulletin-Bach Society = ISSN 0309-7021
L'Echo (Paris. 1973) = ISSN 0245-8721
L'Echo (Paris. 1979) = ISSN 0223-8853
McCalls = ISSN 0024-8908
McCalls (Pattern Book)= ISSN 0198-2487
Afrika (Ed. francaise)= ISSN 0340-5796
Afrika (English ed.) = ISSN 0340-5788

6-13

Only one ISSN is given to a serial title. This ISSN is inseparably linked to the key title, which is a standardised form of title derived from information appearing on the serial. A key title is unique to a particular serial. A key title is necessary due to a variety of problems connected with serial titles. For example, some titles change over a period of time, or include terms like 'Journal' 'Bulletin', 'Record', 'News' etc. Should such a title be arranged under 'Bulletin of the Bach Society' or 'Bach Society Bulletin'?

Serials, such as "Afrika" on the overhead transparency, and which would otherwise have the same key titles, are made distinctive by the addition of qualifying data.

ISSN are allocated and key titles are established by national ISDS centres or by the ISDS International Centre.

OHT 6-13 continued on back...

OHT 6-13 continued

The bibliographic records of serials prepared by national centres are sent for input into the ISDS Register of Serials. As well as ISSN and key-title, other data elements are given which identify and describe the serial.

The ISDS Register of Serials is a computer-based data file. Records are normally prepared on a worksheet coded to fit the data elements. The records in the ISDS Register are standardised and printed in roman script, so some records need to be converted by transliteration. The ISDS International Centre makes use of a wide range of ISO standards to convert these records to the roman alphabet.

The use of the ISSN and of ISDS records is being extended world-wide, and there is an increasing number of national and regional centres. ISSNs are being used in library systems and in union catalogues. They are also being used by publishers in computerised subscription files, in bar-coded labels, and for other purposes.

ISDS records are not identical to those prepared by a national bibliographic agency according to ISBD(S). The purposes of the two systems are different. But there should be as much compatibility as possible between these records.

OBJECTIVE 4. A DESCRIPTION OF THE RESPONSIBILITIES OF THE NATIONAL BIBLIOGRAPHIC AGENCY IN THE INTERNATIONAL INFORMATION COMMUNITY

OHT 6-14

AUTHORITY FILES

"The national bibliographic agency undertakes:

- to maintain an authority control system in accordance with internationally accepted guidelines, for national names
- to establish authoritative forms of names of national authors
- to assist in the compilation of national rules for determining the entry word for national names."

6-14

We have already examined three of the roles of a national bibliographic agency at the beginning of this session.

NOTE see Overhead Transparency 6-2.

Now we will look at a further role of such an agency.

In the past, the choice of headings for bibliographic records has been subject to the greatest divergence - in cataloguing rules and practice - at national and international levels - and between information services. The increasing use of automation in library systems makes it possible to be flexible in the choice of suitable headings. As a result there is no longer a need to find an international uniform approach to this question.

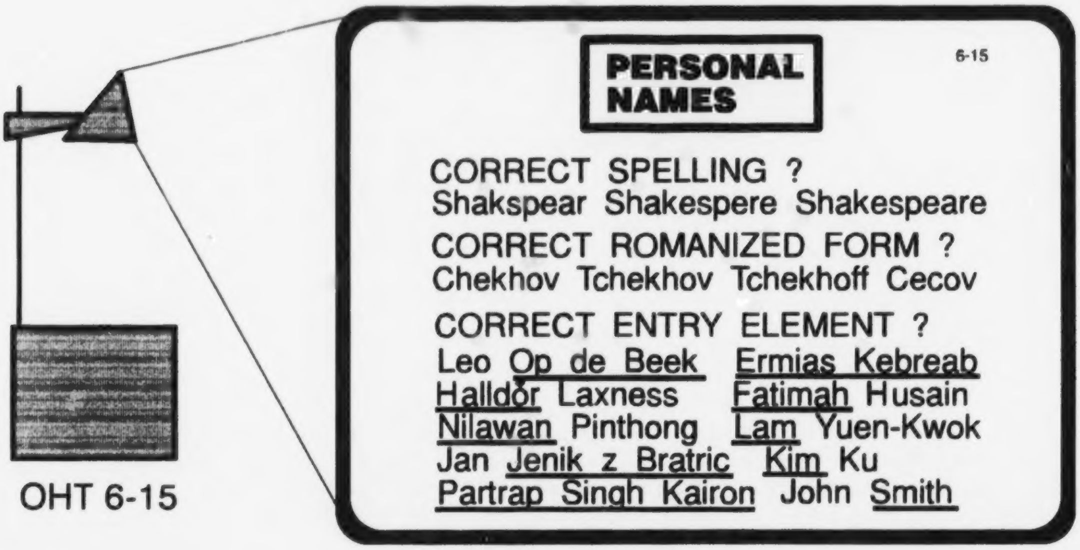
OHT 6-14 continued on back...

OHT 6-14 continued.

But it is still important to try to establish standard forms of names used as headings and entry words. This is an area where there can be no overall international standard. But it is generally accepted that national authoritative forms of names should be used internationally.

The development and maintaining of an authority file is now considered one of the responsibilities of a national bibliographic agency. A shortened version of the resolution of the 1977 International Congress on National Bibliographies appears on the overhead transparency. [24]

(PAUSE for participants to read overhead transparency)



PERSONAL NAMES

6-15

CORRECT SPELLING ?
Shakspear Shakespere Shakespeare

CORRECT ROMANIZED FORM ?
Chekhov Tchekhov Tchekhoff Cecov

CORRECT ENTRY ELEMENT ?
Leo Op de Beek Ermias Kebreab
Halldŏr Laxness Fatimah Husain
Nilawan Pinthong Lam Yuen-Kwok
Jan Jenik z Bratric Kim Ku
Partrap Singh Kairon John Smith

OHT 6-15

International guidelines for making entries for both personal names and corporate bodies in authority files have been developed and published by IFLA. [45, 46]

For when using the names of persons or bodies as headings, a number of problems arise.

What is the correct definitive form? Or the correct spelling and transliterated form of the name?

How can a correct heading be made from that definitive form of name?

How can it be ensured that there is consistency and continuity in using this correct form?

Which is the entry element in a personal name? In some countries the last part is the family name; in others the family name comes first.

OHT 6-15 continued on back...

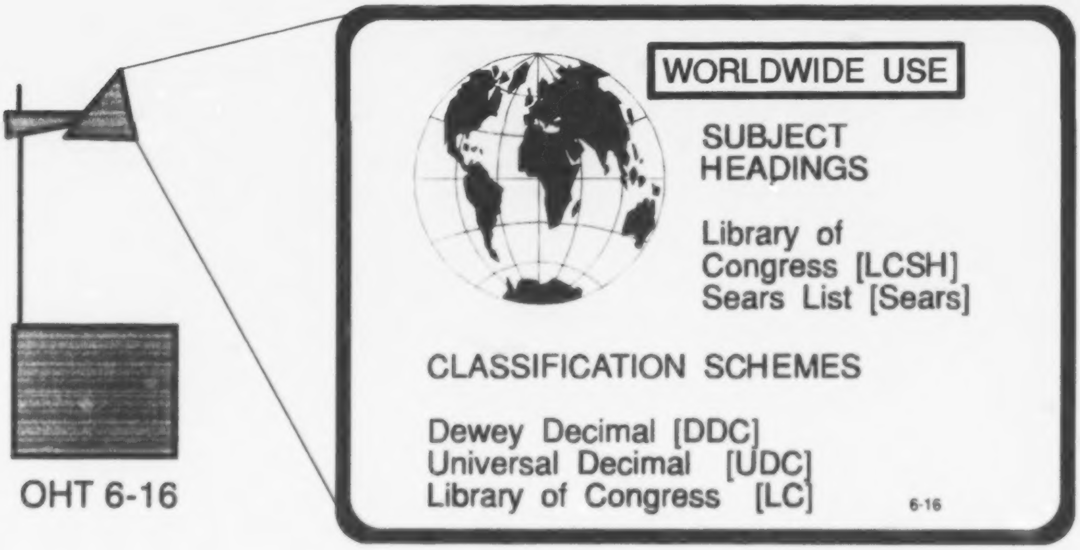
OHT 6-15 continued.

Could corporate bodies be treated as authors? How should they be presented as headings in catalogues?

In some countries there has been no fixed pattern of name usage. Librarians have been prominent in the work of establishing standard forms of names.

Some works do not have a recognizable personal or corporate author. Examples include anonymous classics, sacred scriptures, and works with voluminous authors. A number of publications have been produced which list standard headings for such works, which can be accepted internationally.

So each national bibliographic agency is responsible for maintaining an authority file of national personal names and corporate bodies. Such corporate bodies, especially governmental ones, can change names and functions frequently and such changes are more easily identified within the country concerned.



OHT 6-16

WORLDWIDE USE

SUBJECT HEADINGS

Library of
Congress [LCSH]
Sears List [Sears]

CLASSIFICATION SCHEMES

Dewey Decimal [DDC]
Universal Decimal [UDC]
Library of Congress [LC]

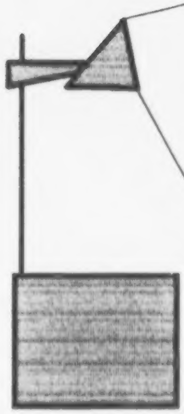
It can be helpful to users if an indication of the subject of an item is included in the bibliographic record. Unfortunately, both subject analysis and classification are very difficult to standardize nationally, and even more so internationally. However, there are some classification schemes and lists of subject headings which are in use world-wide and which can ease the situation slightly. [47 - 51]

The records provided in national bibliographies now usually include either classification numbers or subject headings, or both. The majority of printed issues of national bibliographies are arranged according to one of the internationally used classification schemes. This follows a recommendation of the 1977 International Congress on National Bibliographies. [24]

OHT 6-16 continued on back...

OHT 6-16 continued

Many national bibliographic agencies are preparing specially expanded schedules of these internationally used schemes. These are designed to cover the literature, language, geography and history of that country.



OHT 6-17

INFORMATION SUPPLIED BY PUBLISHER TO CIP AGENCY

DOCUMENTS:

mock up title page; preface; contents; jacket cover; ISBN; publicity leaflets

ON CIP DATA SHEET:

proposed date of publication; price; approx. pagination, illustrations; details of author; binding

6-17

Many national bibliographic agencies have established Cataloguing-in-publication, or CIP schemes.

The publisher supplies the agency with advance information about a new publication in the form of documentation and a completed CIP data sheet. From these the agency makes a brief CIP record. This appears in the issues of the national bibliography and in some cases, in the agency's bibliographic data-base. It is then printed by the publisher in the book, on the back of the title page.

Some concern has been expressed about differing CIP records for the same item, appearing in different countries. This can happen when a multi-national publisher sends CIP records to the CIP schemes in the various countries in which the item is being published.

OHT 6-17 continued on back...

OHT 6-17 continued.

An international CIP meeting was held in 1982 to make various recommendations. As a result "Guidelines for Cataloguing - in - Publication" were prepared by Unesco in 1986. [52]

CIP entries included in a national bibliographic data base must be clearly marked as CIP so that they can be revised or replaced later.

CIP operations are expanding. Publishers and readers are becoming more aware of the marketing and publicity advantages of having pre-publication records in machine readable form. In some countries CIP is also assisting in making publishers more aware of their legal obligations. For example, in the Netherlands the CIP scheme works in conjunction with that of ISBN and the deposit of new publications.

These are some of the forms of international standardisation in bibliographic records that are taking place, to the advantage of information services and their users.

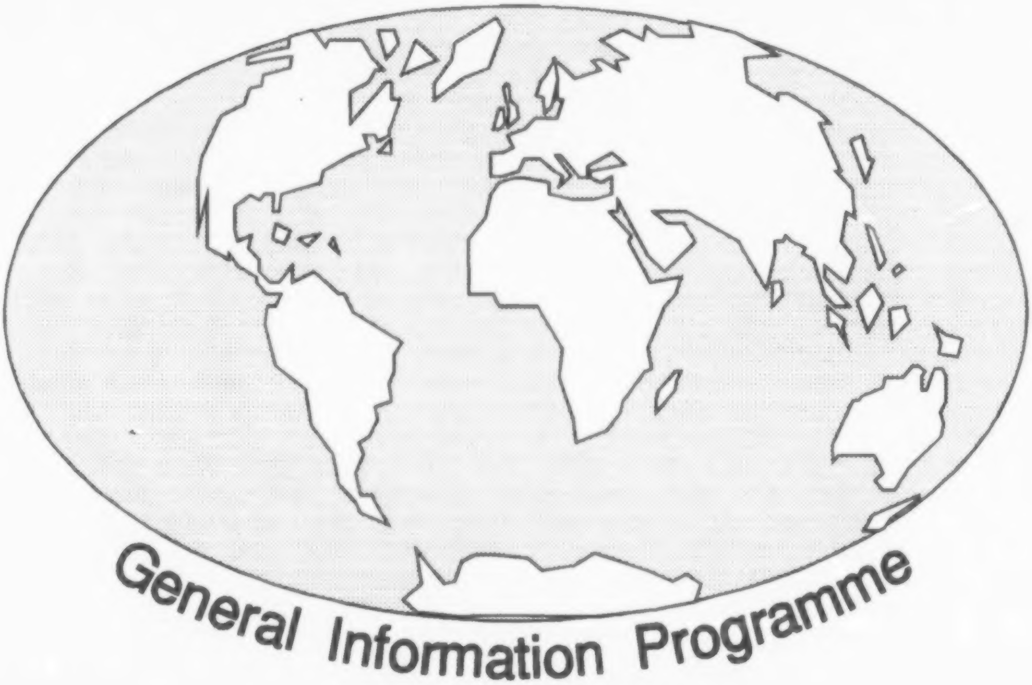
PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 6

Overhead transparency master copies

Photocopy onto plastic sheets approved by the Photocopier Manufacturer ONLY. Copies should be the same size as the originals, with at least a one centimetre margin all round.



COMPATIBLE BIBLIOGRAPHIC RECORDS

1. Introduction
2. Standards and rules
3. Different physical forms
4. International standards and practices
5. International standard identification numbers
6. Authority files
7. Subject content
8. Cataloguing-in-Publication

NATIONAL BIBLIOGRAPHIC AGENCY ROLES

- Preparing authoritative and detailed bibliography for all country's publications
- Making each record internationally acceptable
- Publishing a national bibliography
- Maintaining authority file of national personal / corporate names

HISTORIC CATALOGUING CODES

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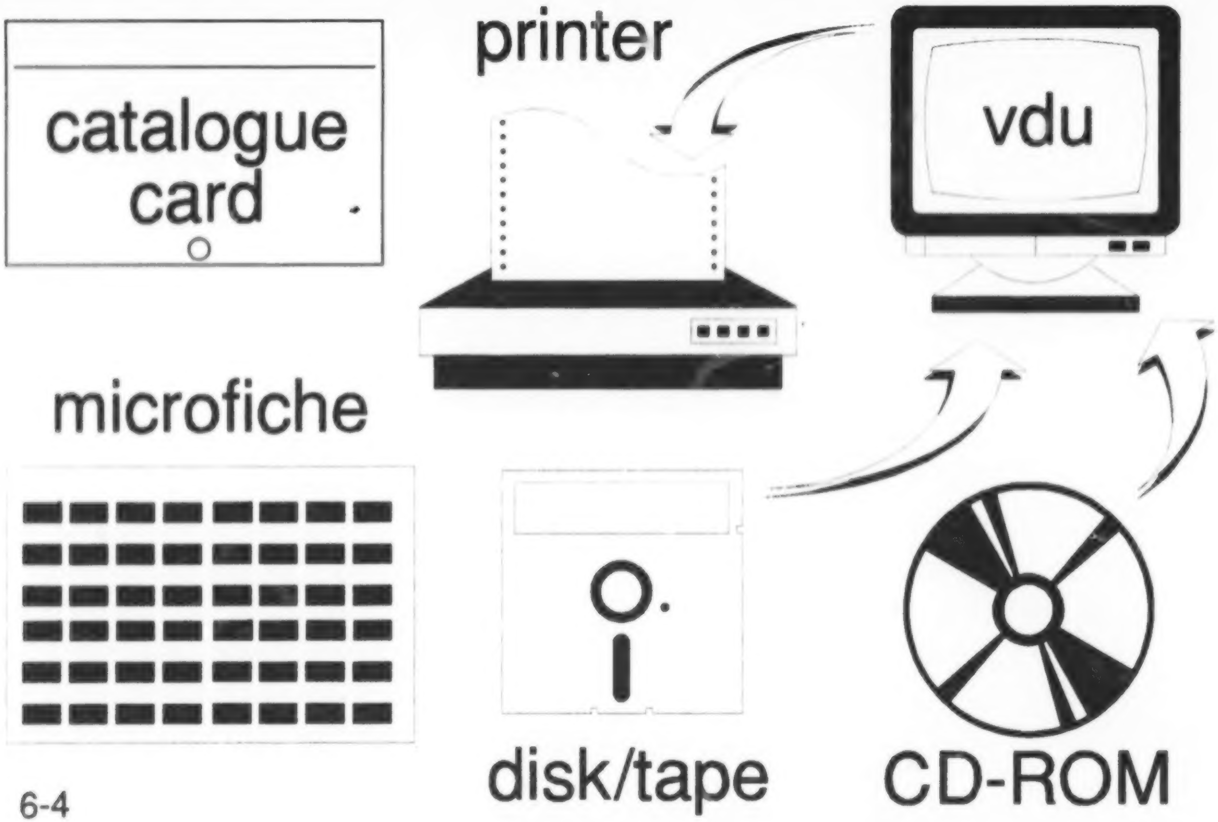
British Museum Rules 1936

Prussian Instructions 1915

PHYSICAL FORMS OF BIBLIOGRAPHIC RECORDS



catalogue card

printer

vdu

microfiche

disk/tape

CD-ROM

UNIVERSAL BIBLIOGRAPHIC CONTROL (UBC)

A Unesco/IFLA international programme:

1. to enable prompt exchange of bib. records

2. to ensure international acceptability

Each country to record its own publications to international standards

MULTI-NATIONAL CATALOGUING RULES

AACR2

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RAK

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- ISBD(S) - Serials
- ISBD(PM) - Printed Music
- ISBD(CP) - 'Component Parts'
- ISBD(CF) - Computer files

AREAS OF THE ISBD DESCRIPTION

- ○ Title and statement of responsibility
- ○ Edition
- ○ Material (or type of publication)
- ○ Publication details
- ○ Physical description
- ○ Series
- ○ Note
- ○ Standard number / terms of availability

ISBD DESCRIPTION
AACR2 FIRST (MINIMUM) LEVEL

Title proper / 1st statement of responsibility, if different from main entry heading or if no main entry heading. - Edition statement. - Material (or type of publication) specific details. - First publisher, etc., date of publication, etc.
- Extent of item. - Note(s).
- Standard number.

ISBN'S IDENTIFY -

1 title / edition from 1 publisher - with number unique to that edition

EACH ISBN = "ISBN + 10 digits"
[4 parts separated by hyphens]

○ 1st part = group of publishers
○ 2nd part = publisher within group
○ 3rd part = title / edition of title
○ 4th part = single digit 'check' number

INTERNATIONAL STANDARD BOOK NUMBERS

TWO EXAMPLES

Publisher: (British) Library Association.
English language monograph published in 2 editions, hardback and paperback.

ISBN 0-85365-631-2 (boards)
ISBN 0-85365-721-1 (paperback)

Publisher: Nigerian, new. Monograph.

ISBN 978-138-001-2

INTERNAT. SERIALS DATA SYSTEM - PURPOSE OF THE ISDS

- worldwide identification of serials through bibliographic control using International Standard Serial Numbers

- maintenance of an international register of serials

EXAMPLES OF KEY TITLES AND ISSNS

[Inseparably linked and unique]

Scientific American = ISSN 0036-8733
Bulletin - Bach Society = ISSN 0309-7021
L'Echo (Paris. 1973) = ISSN 0245-8721
L'Echo (Paris. 1979) = ISSN 0223-8853
McCalls = ISSN 0024-8908
McCalls (Pattern Book) = ISSN 0198-248
Afrika (Ed. francaise) = ISSN 0340-5796
Afrika (English ed.) = ISSN 0340-5788

AUTHORITY FILES

"The national bibliographic agency undertakes:

- to maintain an authority control system in accordance with internat. accepted guidelines, for national names
- to establish authoritative forms of names of national authors
- to assist in the compilation of national rules for determining the entry word for national names."

PERSONAL NAMES

CORRECT SPELLING ?

Shakspear Shakespere Shakespeare

CORRECT ROMANIZED FORM ?

Chekhov Tchekhov Tchekhoff Cecov

CORRECT ENTRY ELEMENT ?

Leo Op de Beek Ermias Kebreab
Halldór Laxness Fatimah Husain
Nilawan Pinthong Lam Yuen-Kwok
Jan Jenik z Bratric Kim Ku
Partrap Singh Kairon John Smith

WORLDWIDE USE

SUBJECT HEADINGS

Library of Congress [LCSH]
Sears List [Sears]

CLASSIFICATION SCHEMES

Dewey Decimal [DDC]
Universal Decimal [UDC]
Library of Congress [LC]

INFORMATION SUPPLIED BY PUBLISHER TO CIP AGENCY

DOCUMENTS :
mock up title page; preface; contents;
jacket cover; ISBN; publicity leaflets

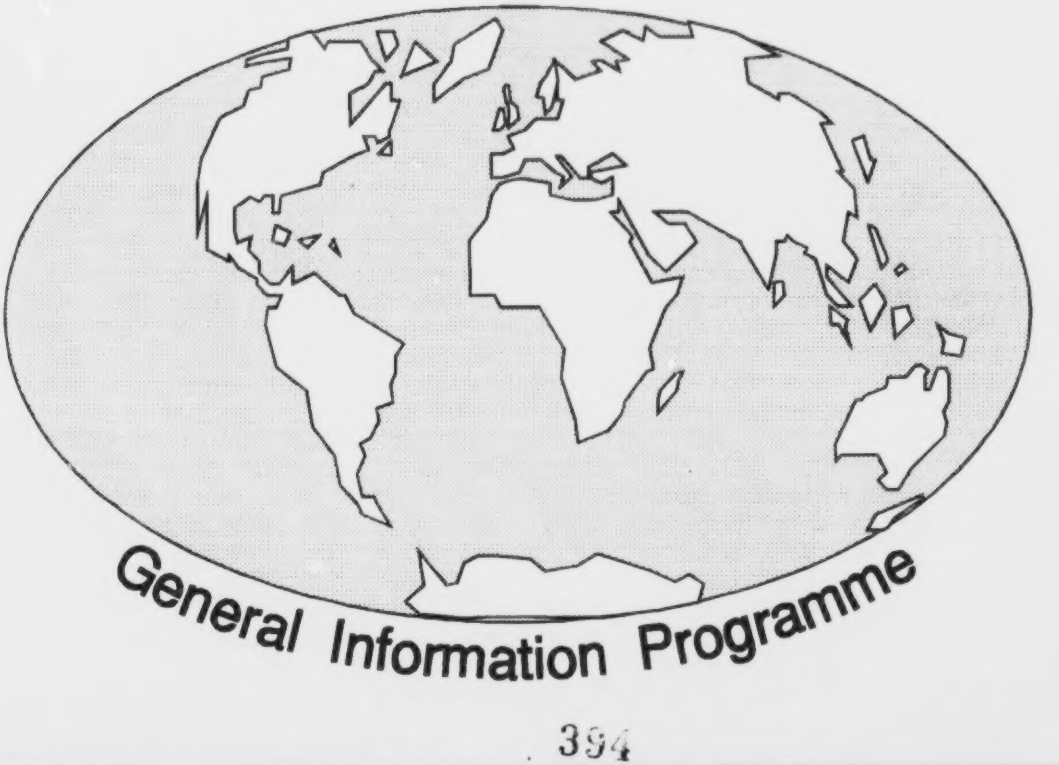
ON CIP DATA SHEET :
proposed date of publication; price;
approx. pagination, illustrations; details of
author; binding

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 7

Computer aspects of bibliographic records


General Information Programme

INSTRUCTORS

PLEASE read **Module 0 - General Introduction to the Teaching Package**, before using this Module. It contains recommendations on how to use the Programme most effectively.

MODULE 0 also contains:

* A list of **ACRONYMS** giving the full titles of organisations referred to in this Teaching Package.

* A **BIBLIOGRAPHY** of documents referred to. These are followed by a [number] in the Module - full details are given in numerical order in the Bibliography.

* **ADDRESSES** of some major organisations denoted by a [letter] in the Module, are listed at the end of the BIBLIOGRAPHY.

* **A GLOSSARY** of computing terminology.

INTRODUCTION TO MODULE 7

This module should only be used with participants who have been taught Modules 3, Computer Hardware and Module 4, Computer Software, or who already have a basic understanding of those two subjects.

This Module consists of three major sections relating to bibliographic data formats for machine use. It is intended as an INTRODUCTION to undergraduate and postgraduate students to give them a general awareness of this highly detailed topic. They will need to gain additional knowledge about this subject if and when they find themselves working in this area after qualification and experience. At that stage further detailed training related to their specific work must be given by established practitioners and specialists if their contribution is to be effective.

It does not include any examples taken from real formats, e.g., the Reference Manual for Bibliographic Descriptions, UNIMARC, the CCF or the related formats used for AGRIS, INIS or ISDS. A short description of these formats is given on the last two pages of these Teaching Notes. Instructors may wish to include such examples in a Seminar session where appropriate.

TIMING

AS A LECTURE Given as it stands, this Module will last approximately 45 minutes.

AS A SEMINAR This Module, including examining the various documents suggested in the teaching notes, should last for approximately 2 hours.

Introduction continued ....

INTRODUCTION TO MODULE 7 continued.

AIM

To familiarise participants with the application of computerisation to the production of bibliographic records.

OBJECTIVES

The module is designed to make participants familiar with:-

1. The major types of data formats,
2. Formatting techniques, including fixed and variable length formats,
3. The major standard exchange formats for bibliographic use.

IT IS RECOMMENDED THAT:

IN SEMINARS AND SHORT COURSES

Instructors should give a copy of the Bibliography and the Glossary in Module 0 to all participants. These can have further items added as appropriate and be updated where necessary.

IN LECTURES IN A LIBRARY AND INFORMATION SCIENCE SCHOOL

Participants should be made aware of where they can obtain a copy of the Bibliography and the Glossary for further study.

METHODS OF PRESENTATION

The Teaching Notes which follow can be used in two ways. EITHER the Instructor can read them aloud, whilst projecting the accompanying OVERHEAD TRANSPARENCIES. OR the Notes can form the basis of the Instructor's own presentation to which additional materials and overhead transparencies can be added where appropriate.

Type in **Bold** or *Italic* is for the information of the Instructor only and should not be read aloud.

BACKGROUND READING

Instructors may wish to consult the following books for further information:-

Burton and Petrie. *The librarians guide to microcomputers for information management.* [12]

Corbin. *Implementing the automated library system.* [13]

Corbin. *Managing the library automation project.* [14]

Tedd. *An introduction to computerised library systems.* [15]

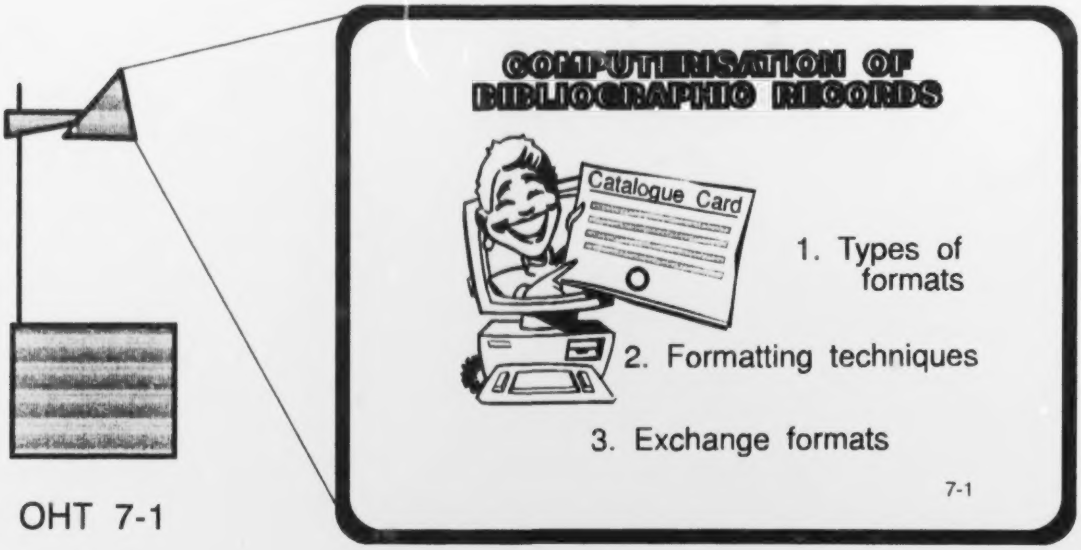
Williams. *Annual review of information science and technology.* [16]

Hagler. *The bibliographic record and information technology.* [25]

Simmons. *The Common Communication Format.* [7]

Hartley. *Online searching - principles and practice.* [53]

TEACHING NOTES



COMPUTERISATION OF BIBLIOGRAPHIC RECORDS

1. Types of formats
2. Formatting techniques
3. Exchange formats

7-1

OHT 7-1

The aim of this Module is to familiarise you with the application of computerisation to the production of bibliographic records. To achieve this aim, we will be examining the three topics listed on the overhead transparency.

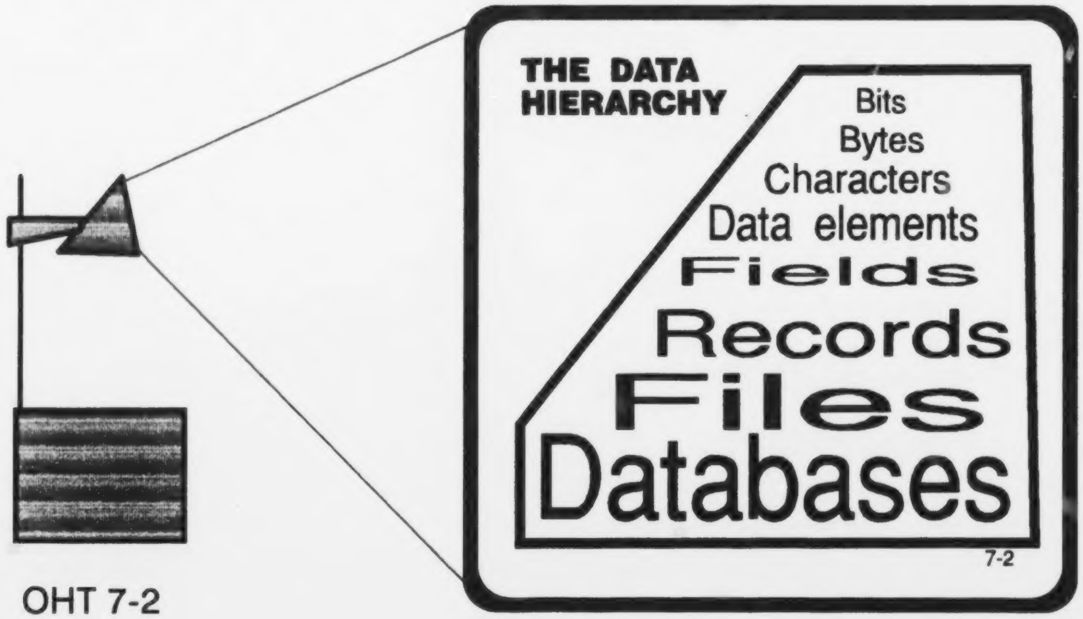
You will find the GLOSSARY useful in further study of these topics. It contains a number of terms used to describe the components of formats. A copy of the GLOSSARY is available

....

....

NOTE - Instructors should remind participants where they can obtain a copy of the Glossary, if it is not possible to give it to each student as a Handout. The GLOSSARY is to be found in Module 0 General Introduction to the Teaching Package.

OBJECTIVE 1. TO MAKE PARTICIPANTS FAMILIAR WITH THE MAJOR TYPES OF DATA FORMATS


THE DATA HIERARCHY
Bits
Bytes
Characters
Data elements
Fields
Records
Files
Databases
7-2

OHT 7-2

A Computer DATABASE is defined as a collection of related files which together carry the records of a single project or enterprise.

The overhead transparency shows the items that make up a computer database, from the smallest to the largest.

NOTE - if participants are already familiar with some of these details, the Instructor should begin with DATA ELEMENTS in the following section as these and subsequent terms are most relevant to this session.

BITS are the basic units of information used by a computer. When written, a bit is represented by a 1 or a 0, corresponding to a computer switch being on or off. Bits are similar to binary numbers.

OHT 7-2 continued on back ...

OHT 7-2 continued.

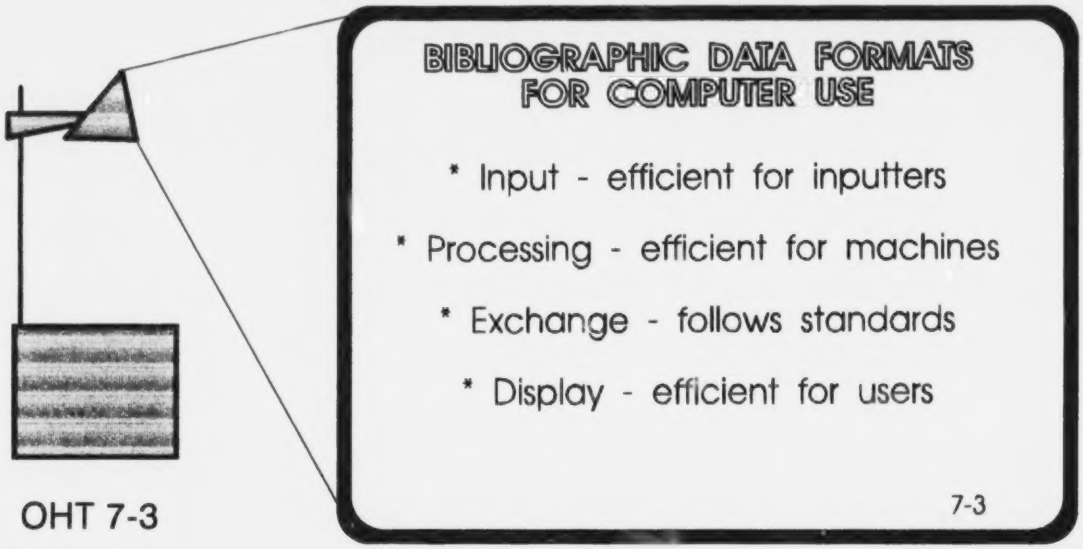
A string of 8 bits makes 1 BYTE. A STRING is defined as a set of consecutive, adjacent items of similar type.

A CHARACTER is a piece of data represented by a single byte - this could be a letter, a number, a punctuation sign, a space or another symbol.

A DATA ELEMENT is an autonomous unit of data, made up of a set of characters. In a bibliographic database a data element could be the number of pages in a book, or its place of publication.

A FIELD is a specified area of a record, used for a particular category of data. A field is made up of data elements. For example, a field could consist of the publication information of a book, or its physical description. A field can consist of a number of sub-fields.

A RECORD is a complete set of fields. When records are stored together they become a FILE stored in the computer's memory. This is rather like the files in a filing cabinet. A collection of related files then makes up a DATABASE.



OHT 7-3

BIBLIOGRAPHIC DATA FORMATS
FOR COMPUTER USE

- * Input - efficient for inputters
- * Processing - efficient for machines
- * Exchange - follows standards
- * Display - efficient for users

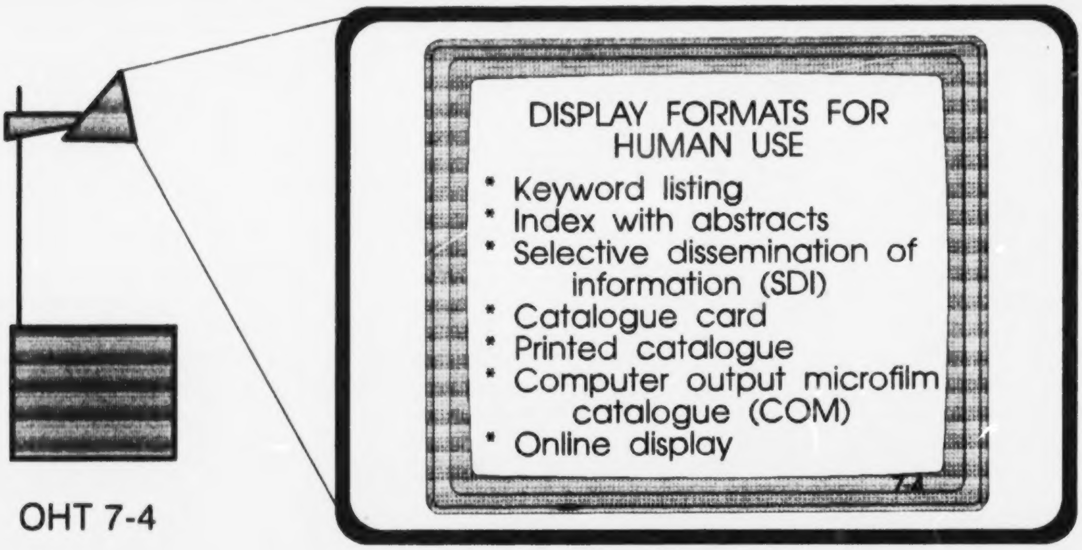
7-3

Broadly, the way in which data is arranged within a record constitutes a data format. For data is always arranged in one format or another. However, the format in which the data appears will vary radically according to its purpose.

This transparency lists the four major types of bibliographic data formats, all of which should be organised in the most efficient way possible.

However, we are not going to follow the natural order on the overhead transparency. We will look at display and input formats first. Then we will go on to exchange formats, a format which follows national or international standards.

It is not necessary to deal with processing formats in this session. For the manipulation of the inputted information inside the computer is carried out without human intervention, and in a way that is most efficient for the machine.



DISPLAY FORMATS FOR HUMAN USE

- * Keyword listing
- * Index with abstracts
- * Selective dissemination of information (SDI)
- * Catalogue card
- * Printed catalogue
- * Computer output microfilm catalogue (COM)
- * Online display

OHT 7-4

The data format which is physically displayed to humans to read, is known as the display format. This is designed to be as efficient for the user as possible. There are several ways in which data can be displayed. Using traditional methods, the production of the first five shown on the overhead transparency is time consuming and tedious work for humans. The other two are impossible.

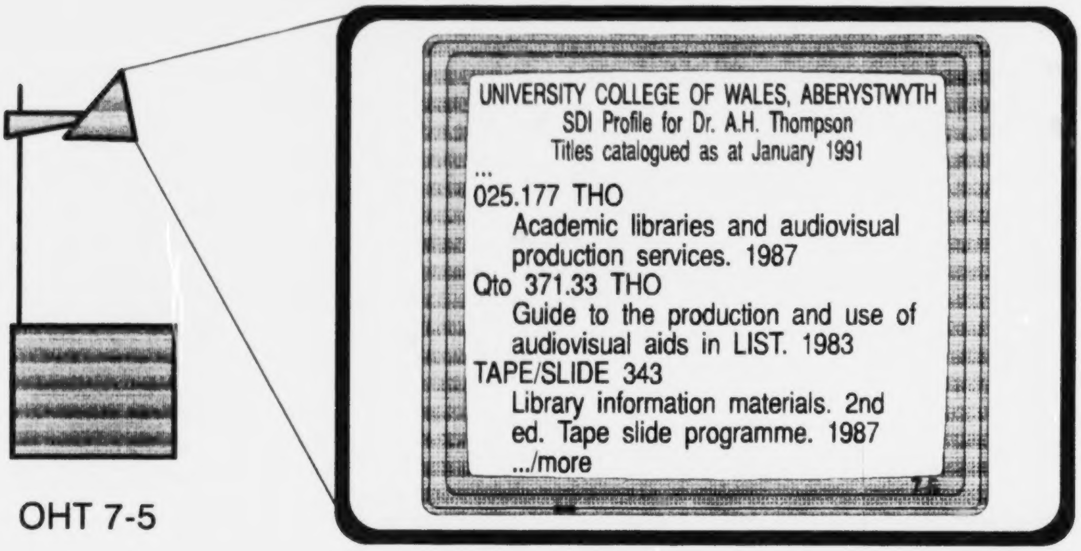
However, provided a suitable software program is used and the appropriate bibliographic records have been inputted correctly into a computer and then stored, all seven of these display formats can be produced easily. For the computer can quickly and automatically manipulate the data to give users all or any of these output products that they require. Apart from giving the computer the necessary instructions, no further human involvement is necessary.

OHT 7-4 continued on back...

OHT 7-4 continued

The physical quality of the displayed output will depend upon the quality of the computer's printers or visual display units.

The amount of information the computer displays and the way it is arranged can also be varied, depending upon the needs of the users of an information service or system.



UNIVERSITY COLLEGE OF WALES, ABERYSTWYTH
SDI Profile for Dr. A.H. Thompson
Titles catalogued as at January 1991
...
025.177 THO
Academic libraries and audiovisual production services. 1987
Qto 371.33 THO
Guide to the production and use of audiovisual aids in LIST. 1983
TAPE/SLIDE 343
Library information materials. 2nd ed. Tape slide programme. 1987
.../more

OHT 7-5

The computer can be instructed to display information taken from a bibliographic database by author, by title, or by subject. Or it could be instructed to display the records by a less obvious method of arrangement, such as ISBN numbers, or by publisher.

Part of an example of an SDI listing is shown on the transparency. These SDI listings can be produced by instructing the computer to do so. KWIC and KWOC indexes can also be produced automatically.

OHT 7-5 continued on back...

OHT 7-5 continued

The computer might be instructed to display the information in the form of a simple catalogue of a particular subject, with minimal bibliographic detail. It could output this on a high quality printer ready for publication. Or it might be required to produce a complete bibliographic entry for use on a catalogue card issued by a national bibliographic agency.

NOTE - In a seminar session, the Instructor may wish to show local or international examples of such computer produced materials. Discuss and compare quality, and whether the amount of information meets the needs of users.

OBJECTIVE 2. TO MAKE PARTICIPANTS FAMILIAR WITH FORMATTING TECHNIQUES, INCLUDING FIXED AND VARIABLE LENGTH FORMATS

OHT 7-6

EXAMPLES OF PART OF INPUT WORKSHEET USING FIXED LENGTH FIELDS

CONTROL NO.______ [6 characters, location in record 0-5]
TITLE ________________ ________________[50, 6-55]
RESPONSIBILITY __________ ________________ [50, 56-105]
EDITION ______________ ______________[30,106-135]...
ISBN ____________[10, 261-270]...
CLASS NO. ________________ ______________[30, 311-340] ...

7-6

Input formats are designed to be as efficient as possible for those who have to input the information into the computer. Any errors occurring at this stage are difficult to eradicate later.

In a computer based bibliographic record, each FIELD or particular category of data, can be inputted in two ways. The first is where the maximum number of letters, numbers or characters in each field is limited or fixed. This is known as a fixed length field.

OHT 7-6 continued on back...

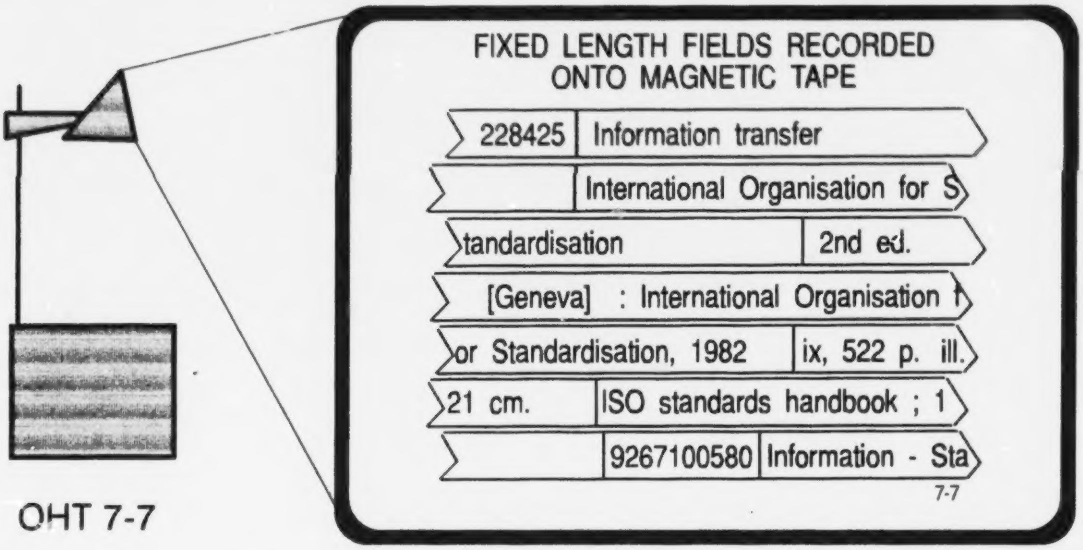
OHT 7-6 continued

On the overhead transparency is an example of part of an Input Worksheet using fields with fixed lengths. Cataloguers may fill in such a worksheet so that the information can be inputted into the computer. Or they could input information directly onto an image of the worksheet shown on the computer screen.

On the transparency, the number of spaces in each field is given as the first figure in the square brackets, and the second set of figures shows the fixed location of the field in the record. For example, spaces 6 to 55 always carry details of a title.

A real Input Worksheet has more detail on it than can be shown on an overhead transparency. So to make it fit on the screen, not all the spaces have been included - nor are all the fields shown that are required for a record. The three dots indicate where fields have been missed out.

This type of input form is efficient for the inputter to use, provided they place one figure or letter on each space marked, leaving the unused spaces blank. In some cases, an entire field may be left blank. For example, if this is the first publication of the work, the field for the 'edition' will be left completely blank.



FIXED LENGTH FIELDS RECORDED ONTO MAGNETIC TAPE

228425 | Information transfer
| International Organisation for S
tandardisation | 2nd ed.
[Geneva] : International Organisation f
or Standardisation, 1982 | ix, 522 p. ill.
21 cm. | ISO standards handbook ; 1
| 9267100580 | Information - Sta

OHT 7-7

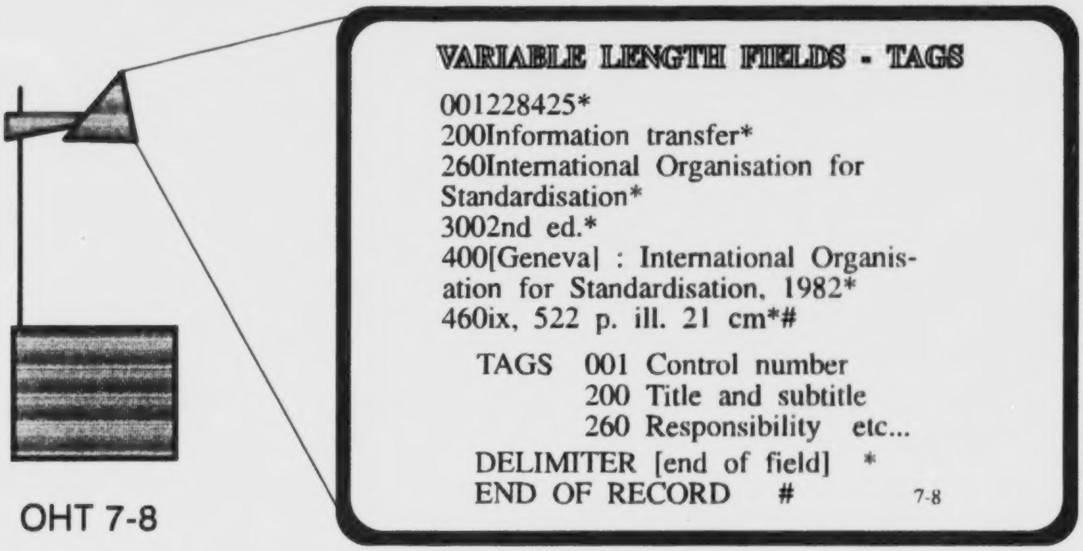
When a bibliographic record made up of fixed length fields is recorded by the computer onto a magnetic disc or tape, each space and its content is recorded. This is done whether the space has been filled in or left blank. Therefore the computer can count the spaces and recognise where each field begins and ends. This leaves a large number of blank spaces on the tape or disc, however, and limits the amount of information that can be stored.

Fixed field formats are perfectly satisfactory for some library tasks, and are used in situations where bibliographic data does not need to be complete in every respect.

OHT 6-7 continued on back...

OHT 7-7 continued

However, sometimes the field length is insufficient for a particular item of data. For example, a long title or a corporate body would not fit the fixed number of spaces and would end up as an incomplete entry. Thus fixed length fields would not be suitable for use when complete bibliographic records are required, as in a national bibliography.



VARIABLE LENGTH FIELDS - TAGS

001228425*
200Information transfer*
260International Organisation for Standardisation*
3002nd ed.*
400[Geneva] : International Organisation for Standardisation, 1982*
460ix, 522 p. ill. 21 cm*#

TAGS 001 Control number
200 Title and subtitle
260 Responsibility etc...
DELIMITER [end of field] *
END OF RECORD #

7-8

OHT 7-8

So the second way of inputting FIELDS into the computer involves the use of a variable length field. For when large or complete bibliographic records are required, the length of most fields cannot be fixed. However, depending upon circumstances or for particular types of fields it may be possible to specify some minimum or maximum length. An example of this would be the Field containing the ISBN, where the length is known and does not vary.

However, as most fields are not of a specified length that the computer can recognise, some method of identifying and separating the fields from each other has to be used.

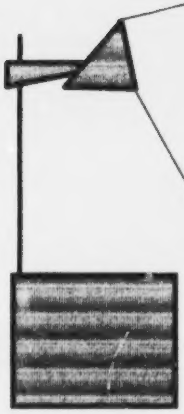
OHT 7-8 continued on back...

OHT 7-8 continued

So TAGS are used to identify where fields begin, and DELIMITERS show where the fields end. Thus a variable length field can be made up of a TAG consisting of three characters, the DATA itself, followed by the DELIMITER which consists of one character. This can be seen on the overhead transparency. Tags use 3-digit identifiers which are specified by ISO 2709, as are the delimiter and END OF RECORD MARKS. [54]

In addition to the tags and fields shown and described on the transparency, tag 300 is used for edition, 400 for the publication information, 460 for the physical description, 500 for the ISBN and 700 for the classification number. Other tags can be used, such as 480 for series and 600 for index terms.

Note that there is no punctuation at the end of the fields. This will be supplied by the output format.



OHT 7-9

VARIABLE LENGTH FIELDS
SUB-FIELDS

001228425*
200Information transfer*
260International Organisation for Standardisation*
400@A[Geneva]@BInternational Organisation for Standardisation@C1982*
46000@Aix, 522 p. ill.@B21 cm* ... #

FORMAT STRUCTURE - Sub-field codes
TAG[3]-SFCode[2]-Data-SFCode[2]-data-*

FORMAT STRUCTURE - SF Codes/Indicators
TAG-IND[2]-SFCode-Data-SFCode-Data-* 7-9

It is possible to break down each field into further sub-fields, if required. This would be done to allow the computer to identify larger numbers of specific data elements without having to expand the number of fields. For example, look at the line beginning 400 on the transparency. Here TAG 400, Publication information, has been divided into sub-fields - A place - B publisher and C date. This would enable the computer to produce information based on these sub-fields. For example, the computer could identify for the user all books published in Geneva or all ISO publications that are in the data-base.

There are other examples of sub-fields in use. For instance Line 200 - Title information, can be broken down into A - title and subtitle, B - statement of responsibility, C - language of title and D - script of title. Similarly LINE 460, Physical Description, can include A - descriptive details, B dimensions, and C - accompanying materials.

OHT 7-9 continued on back...

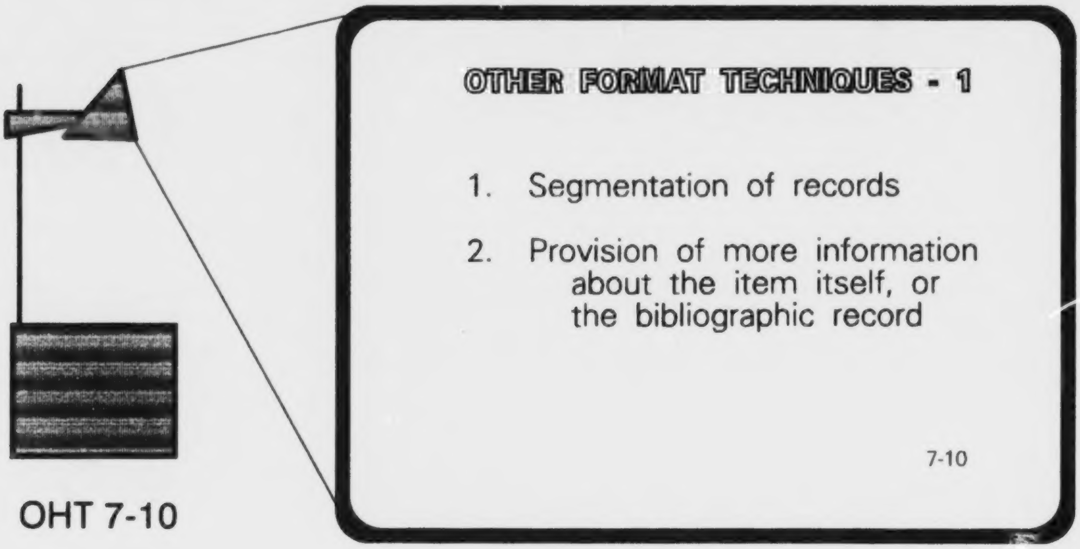
OHT 7-9 continued

The sub-fields are identified by the use of sub-field codes, a two character code consisting of @ (and) plus one letter, as on the transparency. When sub-field codes are used, the format structure of a field is given on the overhead transparency.

The line beginning 460 contains two INDICATORS, 00, followed by sub-fields @A and @B. Indicators, made up of one or two characters, often numbers, give the computer supplementary manipulation information. They are used to contain information useful for the processing of the field, such as the number of characters to be skipped for filing or sorting. Indicators are included in most standard formats, but are not widely used.

The format structure where both sub-field codes and indicators are used, is shown at the bottom of the transparency. Here a field could consist of a TAG of 3 numbers - one or two INDICATORS if used, with one or two characters - a SUBFIELD CODE of two characters - then the DATA - followed by further sub-field codes and data - then ended by a DELIMITER of one character.

We have seen that when a bibliographic record made up of FIXED LENGTH FIELDS is recorded by the computer onto a magnetic disc or tape - each space and its content whether empty or full is recorded. This takes up a great deal of space. When a bibliographic record using variable field lengths is recorded onto disc or tape, no empty spaces are recorded, resulting in a much more compact record and a more efficient use of the disk or tape.



OTHER FORMAT TECHNIQUES - 1

1. Segmentation of records
2. Provision of more information about the item itself, or the bibliographic record

7-10

OHT 7-10

If required, some bibliographic data formats can use further formatting techniques, using codes, to provide additional information to the computer. These can include giving details of any special features of or in the item, the form by which it has been reproduced, or additional bibliographic information for the record. They can also be used to create links with other records.

Some of these are shown on this and the next overhead transparency.

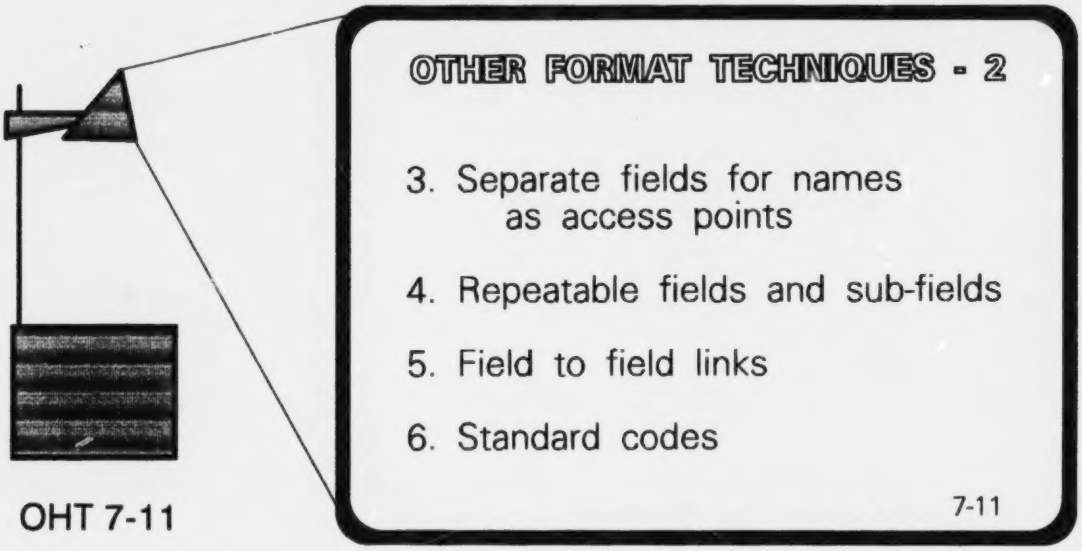
It is not necessary at this stage to know how these techniques work, only that they are possible. A knowledge of how these techniques work would only be necessary on a training course for a person about to commence such work.

OHT 7-10 continued on back...

OHT 7-10 continued

In certain cases, it may be necessary to split bibliographic records into sub-records or segments. Segmentation is a technique for handling sub-records, each of which describes a bibliographic entity. For example, each play in a collected work of drama is a bibliographic entity. Segmentation allows each sub-record to be manipulated separately so that the user can access the record more effectively or so that the content of the work can be analysed. However, not all formats permit segmentation; although CCF, the Common Communication Format, does. [7]

Sometimes it is necessary to provide more information than normal about an item. This would include any special features of the item or an unusual form of reproduction. Or it may be necessary to provide some additional information about the record itself - for example whether it is a new record or a revision, or whether it is a preliminary or a complete record.



OHT 7-11

OTHER FORMAT TECHNIQUES - 2

3. Separate fields for names as access points
4. Repeatable fields and sub-fields
5. Field to field links
6. Standard codes

7-11

To help the user trace the item, it may be necessary to provide separate fields for personal, corporate or conference names as access points. Or to repeat fields or sub-fields where there is more than one personal name, or for index terms.

Sometimes it is necessary to create links between fields, segments or records to assist the user to find what they require.

Two fields can be linked together, for instance to link an author with the organisation they work for, a publisher to a place, an ISBN to its publisher or a field with its transliterated version.

Segments or sub-records can be linked. For example, earlier and later editions, variant editions, former or subsequent titles of a periodical, translations or editions in another language, or with a review of the item.

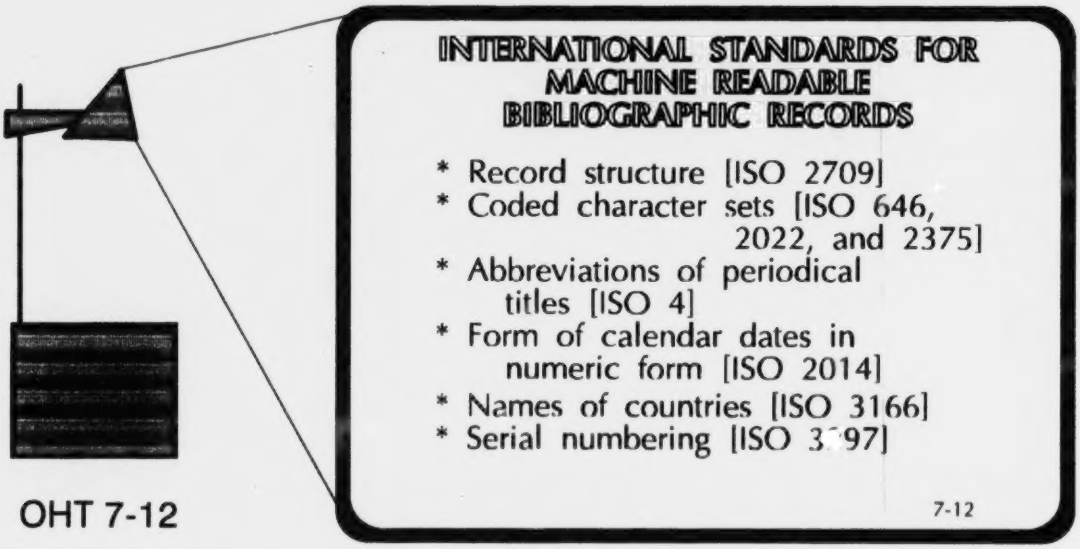
OHT 7-11 continued on back...

OHT 7-11 continued

Related records can be linked together. For example, linking an older title of a periodical to the current title or vice versa, or relating the original item with a translated version.

Standard codes may also be included in the record to describe countries, the physical medium the information is contained in, language, the character sets used, or the names of bibliographic and legal deposit agencies. Many of these codes are covered by international standards. [7]

OBJECTIVE 3. TO MAKE PARTICIPANTS FAMILIAR WITH THE MAJOR STANDARD EXCHANGE FORMATS FOR BIBLIOGRAPHIC USE



INTERNATIONAL STANDARDS FOR MACHINE READABLE BIBLIOGRAPHIC RECORDS

* Record structure [ISO 2709]
* Coded character sets [ISO 646, 2022, and 2375]
* Abbreviations of periodical titles [ISO 4]
* Form of calendar dates in numeric form [ISO 2014]
* Names of countries [ISO 3166]
* Serial numbering [ISO 3297]

7-12

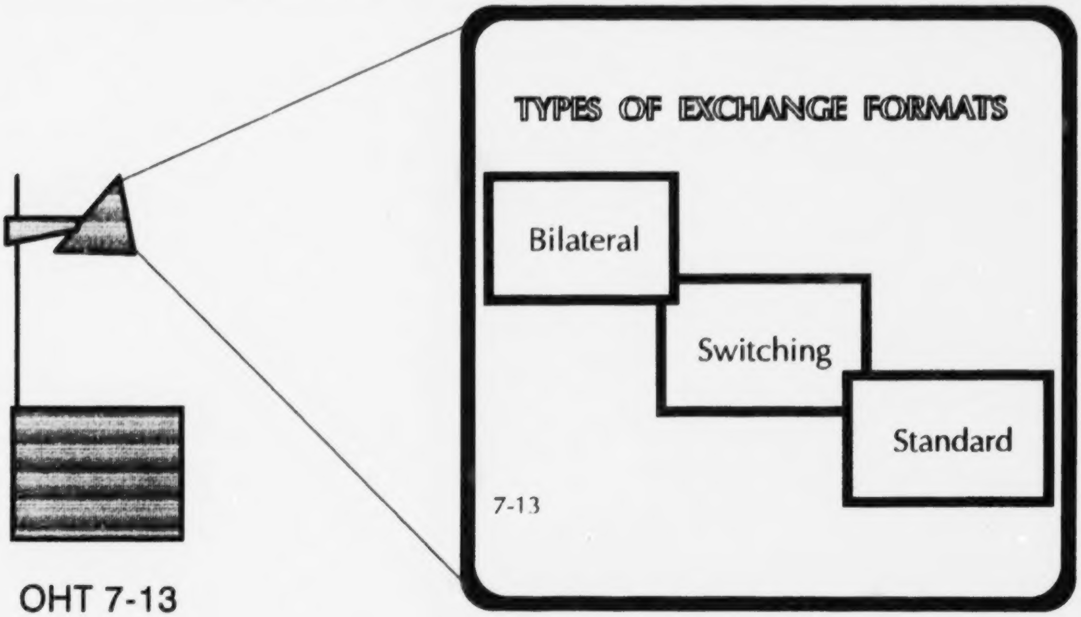
OHT 7-12

So that computerised bibliographic records can be exchanged between local, national and international agencies, a number of international standards relating to bibliographic data exchange formats and their components have been produced. Most of them are listed on the overhead transparency. [54, 55, 56, 57, 58, 59, 60, 44]

These standards are necessary to permit the efficient and simple exchange of such machine readable records. For the computer of one agency should be able to read the records of another agency. If it could only do so after a complex and expensive conversion process or could not do so at all - then the concept of international exchange of bibliographic records could never become a reality.

OHT 7-12 continued

Other elements of exchange formats such as language, scripts, the description of the physical medium and the role of the responsible person or body, are standardized by convention or custom. However, some of them are in the process of becoming ISO Standards as well.



TYPES OF EXCHANGE FORMATS

Bilateral

Switching

Standard

7-13

OHT 7-13

When bibliographic agencies agree to the exchange of data, that is to make their bibliographic records available to each other, three possible solutions exist.

The first solution is where two or more institutions agree to use the same format. A bilateral format is the simplest method for the machines involved, provided that standardisation is adhered to throughout the institutions. However, it is the most difficult solution in practice because of differing institutional requirements.

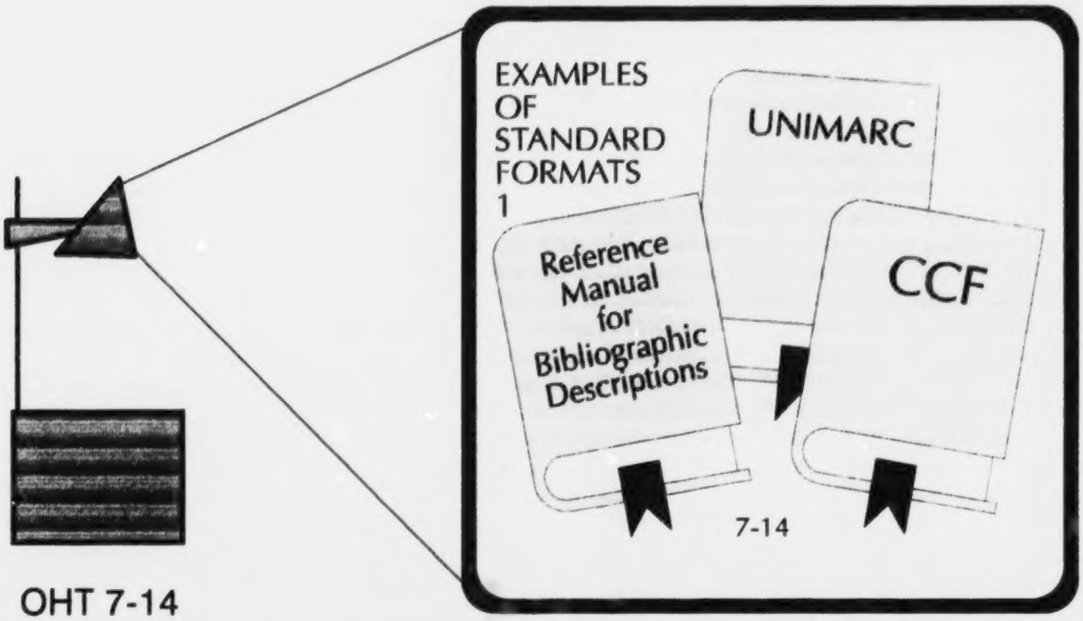
NOTE - 'bilateral' - means affecting two participants reciprocally.

The second solution is that of switching formats. Here the co-operating institutions do not have to use the same bibliographic data format. When records are exchanged, they are intercepted by a switching format which is an intermediate software package. This package is designed to accept the different inputs from the co-operating institutions and switch between them, thus converting from one format to another.

OHT 7-13 continued on back...

OHT 7-13 continued

The third solution is for all the institutions involved to use standard formats. Equipment must be configured in such a way that it can accept the output of another participant.



EXAMPLES
OF
STANDARD
FORMATS
1

UNIMARC
Reference Manual for Bibliographic Descriptions
CCF
7-14

OHT 7-14

The next two overhead transparencies list the major standard formats in international use. While all follow the ISO 2709 standard, each one has certain unique features. [54]

Unesco's 'Reference Manual for machine readable bibliographic Descriptions' is designed for general bibliographic use, although most users are abstracting and indexing organizations. It includes catalogue rules, and acts as a source for local and bilateral formats. It follows the other ISO standards for record structures and coded character sets. [20]

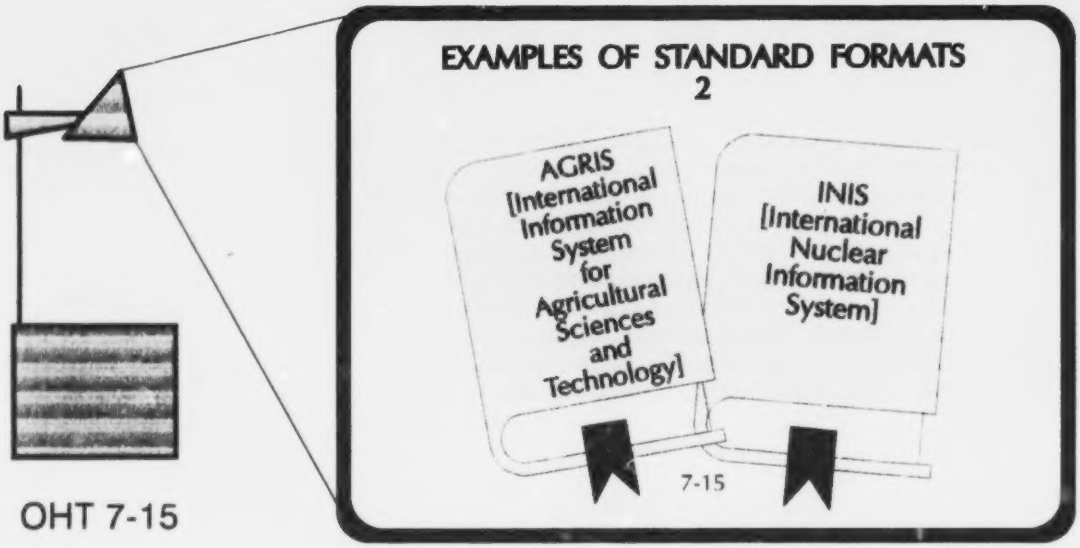
OHT 7-14 continued on back...

OHT 7-14 continued

UNIMARC, the Universal MARC Format is published and distributed by IFLA, the International Federation of Library Associations and Institutions. Again it is designed for general bibliographic use, but all its users are national libraries. As UNIMARC is based on the International Standard Bibliographic Descriptions (ISBD), national libraries use it to enable them to exchange their MARC records. [61]

It may not be changed or altered by its users, so standardisation is ensured. UNIMARC also follows ISO standards for record structure, and coded character sets.

CCF: The Common Communication Format is also designed for general bibliographic use. However it is restricted to dealing with printed texts only. It is intended for both local use and data exchange. It is compatible with the Unesco Reference Manual and UNIMARC. It does not include cataloguing rules, but does permit the addition of local elements. It also follows ISO standards for record structure and coded character sets. [7]



EXAMPLES OF STANDARD FORMATS
2

AGRIS
[International
Information
System
for
Agricultural
Sciences
and
Technology]

INIS
[International
Nuclear
Information
System]

7-15

OHT 7-15

This transparency shows two specific user groups, AGRIS and INIS which use standard formats based on the Reference Manual for Bibliographic Descriptions.

NOTE - in seminar sessions Instructors may wish to show items related to these organisations and examples of the international bibliographic formats covered on OHT 7-14.

It is not necessary for all the institutions involved in these and other international data exchange systems, to have standardised equipment. But the equipment must be configured to accept input from the other institutions involved.

Thus, only by the adoption of standardised formatting techniques and one of the internationally recognised standard data formats, can the international exchange of bibliographic records be effectively and economically achieved.

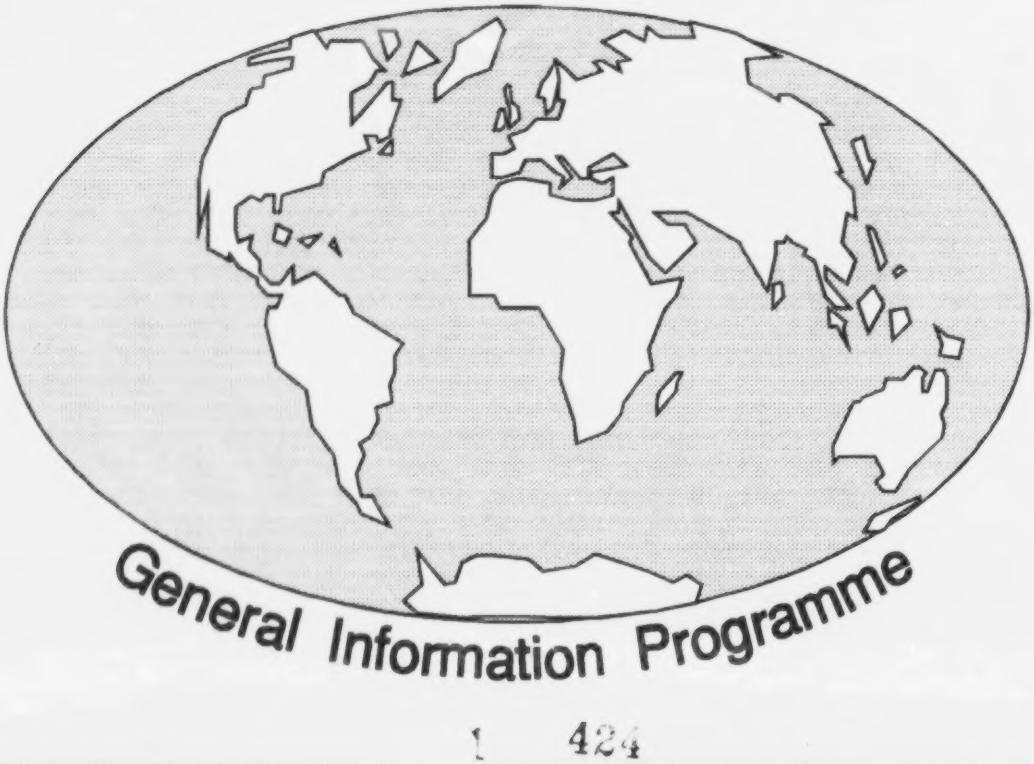
PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

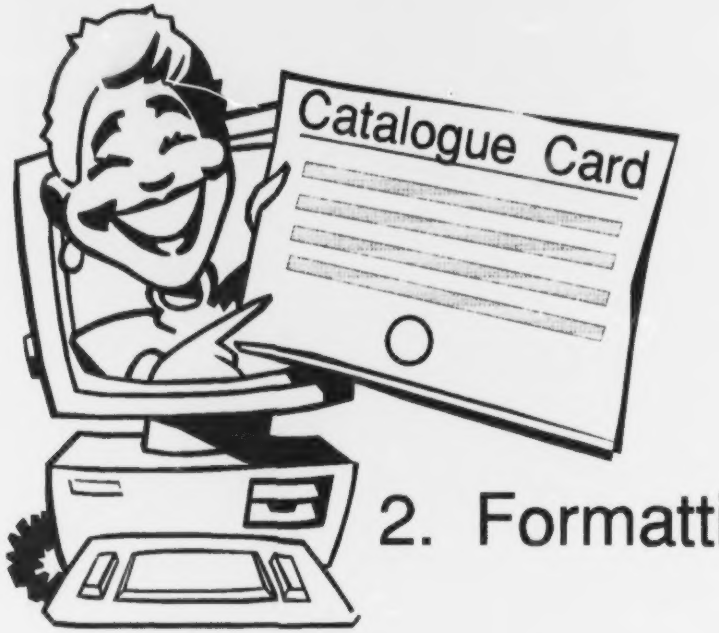
Module 7

Overhead transparency master copies

Photocopy onto plastic sheets approved by the Photocopier Manufacturer ONLY. Copies should be the same size as the originals, with at least a one centimetre margin all round.



COMPUTERISATION OF BIBLIOGRAPHIC RECORDS


Catalogue Card

1. Types of formats
2. Formatting techniques
3. Exchange formats

THE DATA HIERARCHY

Bits
Bytes
Characters
Data elements
Fields
Records
Files
Databases

BIBLIOGRAPHIC DATA FORMATS FOR COMPUTER USE

- Input - efficient for inputters
- Processing - efficient for machines
- Exchange - follows standards
- Display - efficient for users

DISPLAY FORMATS FOR HUMAN USE

- * Keyword listing
- * Index with abstracts
- * Selective dissemination of information (SDI)
- * Catalogue card
- * Printed catalogue
- * Computer output microfilm catalogue (COM)
- * Online display

UNIVERSITY COLLEGE OF WALES, ABERYSTWYTH

SDI Profile for Dr. A.H. Thompson
Titles catalogued as at January 1991

...

025.177 THO
    Academic libraries and audiovisual production services. 1987

Qto 371.33 THO
    Guide to the production and use of audiovisual aids in LIST. 1983

TAPE/SLIDE 343
    Library information materials. 2nd ed. Tape slide programme. 1987

.../more

EXAMPLES OF PART OF INPUT WORKSHEET USING FIXED LENGTH FIELDS

CONTROL NO._ _ _ _ _ _ _ [6 characters, location in record 0-5]

TITLE _ [50, 6-55]

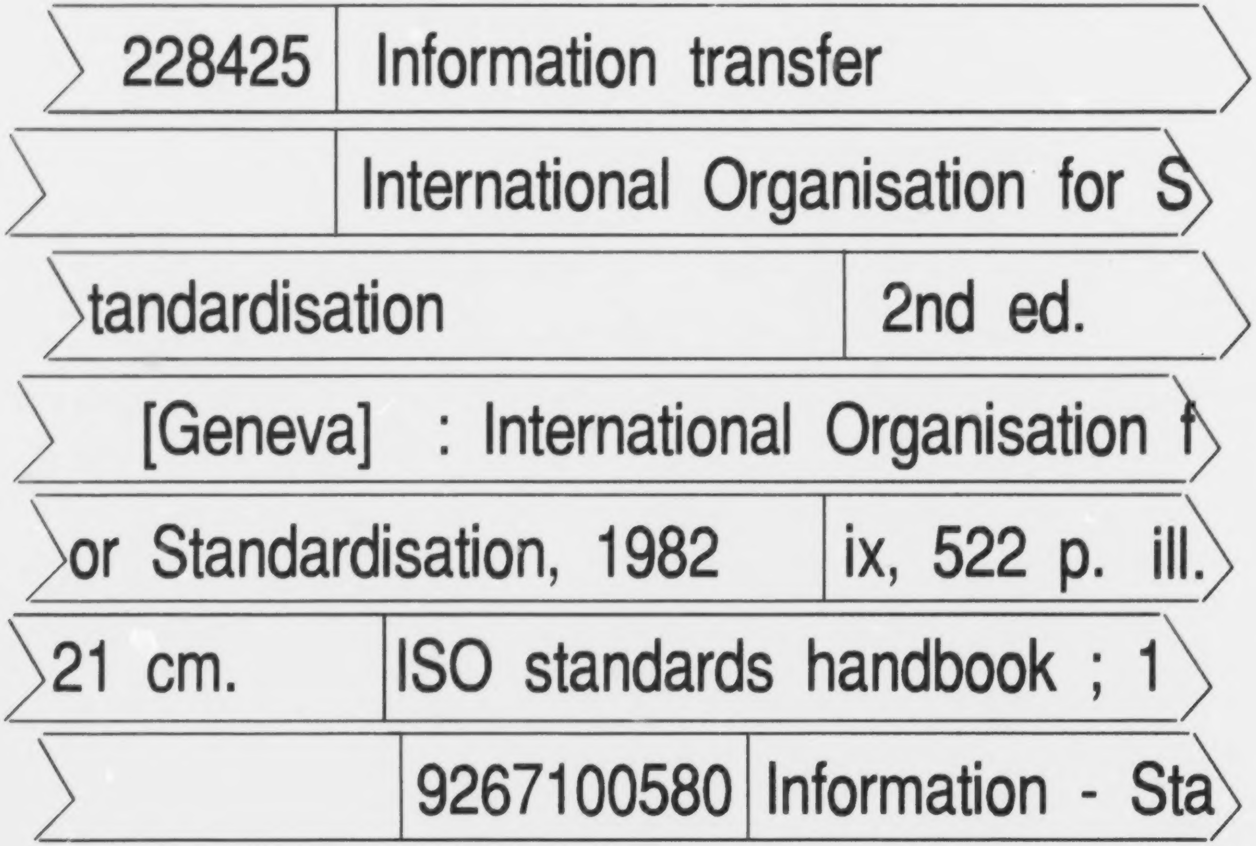
RESPONSIBILITY _ [50, 56-105]

EDITION _ [30,106-135]...

ISBN _ _ _ _ _ _ _ _ _ _ _ _ _ _ [10, 261-270]...

CLASS NO. _ [30, 311-340] ...

FIXED LENGTH FIELDS RECORDED ONTO MAGNETIC TAPE


228425
Information transfer
International Organisation for S
tandardisation
2nd ed.
[Geneva] : International Organisation f
or Standardisation, 1982
ix, 522 p. ill.
21 cm.
ISO standards handbook ; 1
9267100580
Information - Sta

VARIABLE LENGTH FIELDS - TAGS

001228425*
200Information transfer*
260International Organisation for Standardisation*
3002nd ed.*
400[Geneva] : International Organisation for Standardisation, 1982*
460ix, 522 p. ill. 21 cm*#

TAGS	001	Control number
	200	Title and subtitle
	260	Responsibility etc...

DELIMITER [end of field] *
END OF RECORD #

VARIABLE LENGTH FIELDS
SUB-FIELDS

001228425*
200Information transfer*
260International Organisation for Standardisation*
400@A[Geneva]@BInternational Organisation for Standardisation@C1982*
46000@Aix, 522 p. ill.@B21 cm* ... #

FORMAT STRUCTURE - Sub-field codes
TAG[3]-SFCode[2]-Data-SFCode[2]-data-*

FORMAT STRUCTURE - SF Codes/Indicators
TAG-IND[2]-SFCode-Data-SFCode-Data-*

OTHER FORMAT TECHNIQUES - 1

1. Segmentation of records

2. Provision of more information about the item itself, or the bibliographic record

OTHER FORMAT TECHNIQUES - 2

3. Separate fields for names as access points
4. Repeatable fields and sub-fields
5. Field to field links
6. Standard codes

INTERNATIONAL STANDARDS FOR MACHINE READABLE BIBLIOGRAPHIC RECORDS

* Record structure [ISO 2709]
* Coded character sets [ISO 646, 2022, and 2375]
* Abbreviations of periodical titles [ISO 4]
* Form of calendar dates in numeric form [ISO 2014]
* Names of countries [ISO 3166]
* Serial numbering [ISO 3297]

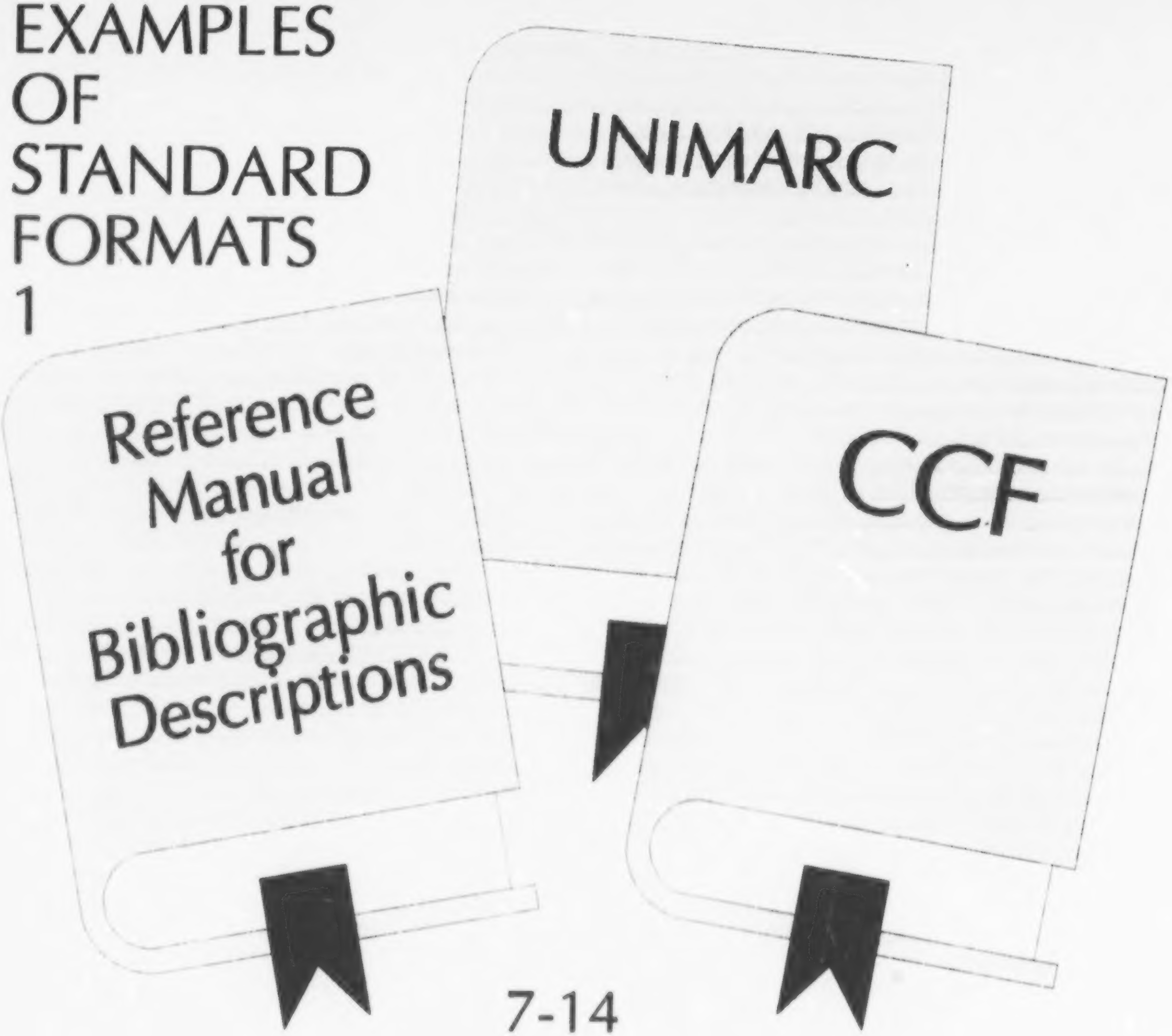
TYPES OF EXCHANGE FORMATS

Bilateral

Switching

Standard

EXAMPLES
OF
STANDARD
FORMATS
1


UNIMARC
Reference Manual for Bibliographic Descriptions
CCF

EXAMPLES OF STANDARD FORMATS
2

AGRIS
[International
Information
System
for
Agricultural
Sciences
and
Technology]

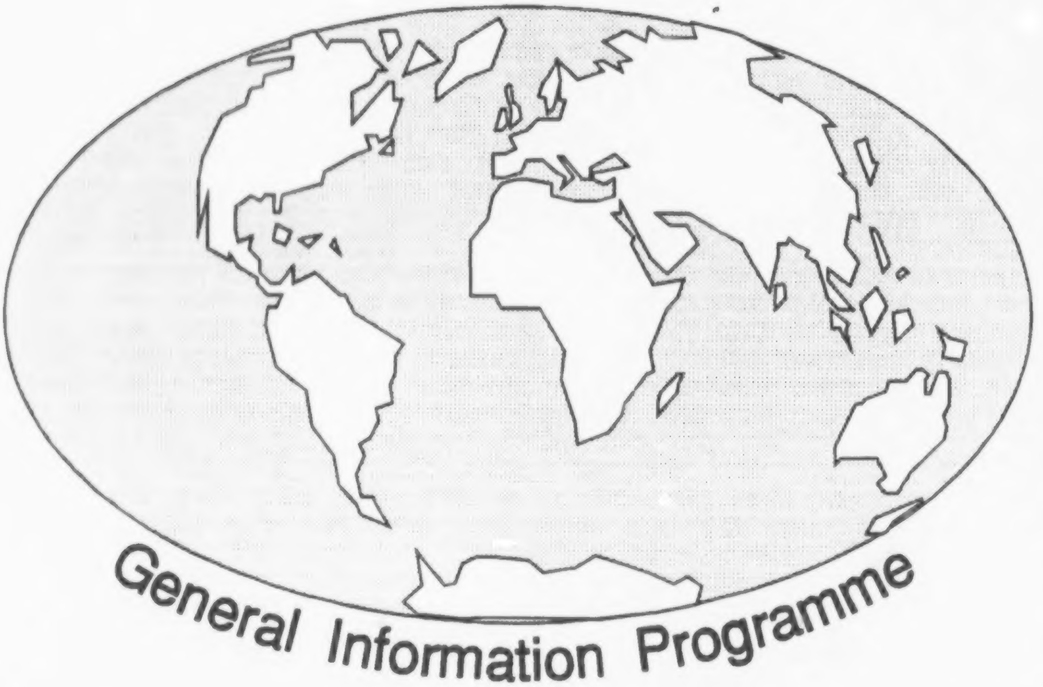
INIS
[International
Nuclear
Information
System]

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 8

Standardisation in subject analysis


General Information Programme

INSTRUCTORS

PLEASE read **Module 0 - General Introduction to the Teaching Package,** before using this Module. It contains recommendations on how to use the Programme most effectively.

MODULE 0 also contains:

* A list of **ACRONYMS** giving the full titles of organisations referred to in this Teaching Package.

* A **BIBLIOGRAPHY** of documents referred to. These are followed by a [number] in the Module - full details are given in numerical order in the Bibliography.

* **ADDRESSES** of some major organisations denoted by a [letter] in the Module, are listed at the end of the BIBLIOGRAPHY.

* A **GLOSSARY** of computing terminology.

INTRODUCTION TO MODULE 8

This Module deals with the implications of standardisation on subject analysis and information retrieval. It is therefore recommended that it is given as a final session of a course on these subjects. It will introduce the concept of international standardisation and act as a review of the course.

Subject analysis and information retrieval are areas of standardisation where international standards in the strict sense of the word exist only sporadically. However it is one of the fields where standardisation as such, as well as a knowledge of individual standards that do exist, is especially important for networking. It is also important when retrieving stored data, and when disseminating new data. Subject analysis and retrieval, without standards, cannot be effective. When designing new computerised information systems, it is critical that consideration is given to the methods of subject analysis used by other information systems to which the new system is likely to be connected.

TIMING

AS A LECTURE

Given as it stands, this Module will last approximately 40 minutes.

AS A SEMINAR

This Module, including the demonstration and examination of the various materials included in the teaching notes, should last for approximately 2 hours.

Introduction continued ....

Introduction to Module 8 continued.

AIM

The aim of this Module is to show that subject analysis and retrieval cannot be effective without standardisation.

OBJECTIVES

To examine the implications of standardisation on:-

1. abstracting / content surrogates
2. retrieval languages
    - 2.1. classification schemes
    - 2.2. natural language-based vocabularies and indexing tools such as subject headings, thesauri, etc.
3. indexing rules
4. computerised information retrieval.

BACKGROUND READING

The instructor may find further useful information in:

Saracevic. *Consolidation of information.* [62]

IT IS RECOMMENDED THAT:

IN SEMINARS AND SHORT COURSES Instructors should give a copy of the Bibliography in Module 0 to all participants. The Bibliography can have further items added to it as appropriate and be updated as new standards are published.

IN LECTURES IN A LIBRARY AND INFORMATION SCIENCE SCHOOL, participants should be made aware of where they can obtain a copy of the Bibliography for further study.

METHODS OF PRESENTATION

The Teaching Notes which follow can be used in two ways. EITHER the Instructor can read them aloud, whilst projecting the accompanying OVERHEAD TRANSPARENCIES. OR the Notes can form the basis of the Instructor's own presentation to which additional materials and overhead transparencies can be added where appropriate.

Type in **Bold** or *Italic* is for the information of the Instructor only and should not be read aloud.

TEACHING NOTES

INTRODUCTION

OHT 8-1

SUBJECT ANALYSIS

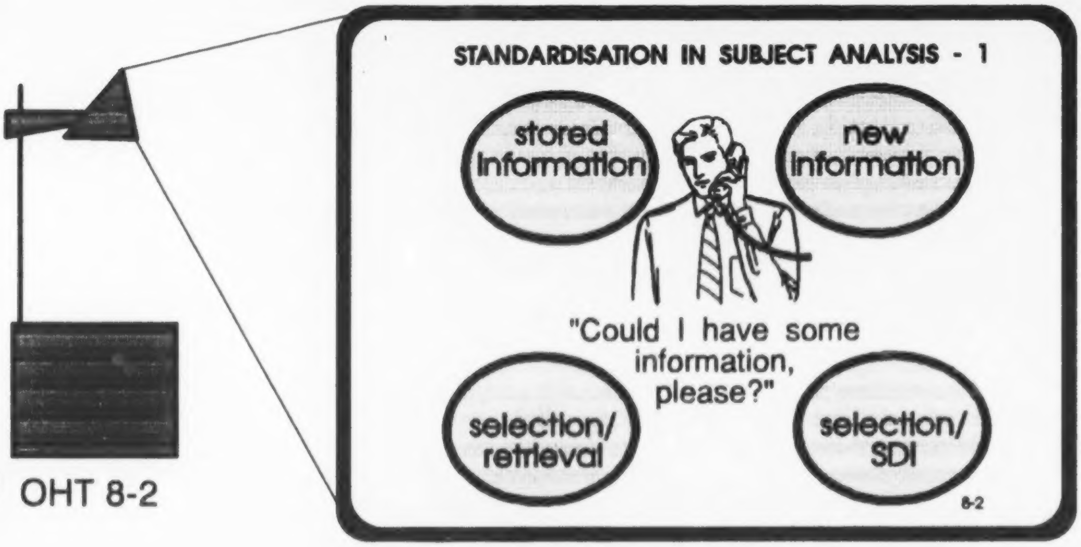
The implications of standardisation on:-

- Subject analysis
- Abstracting, content surrogates
- Retrieval languages
- Classification schemes
- Natural language based vocabularies, indexing tools
- Indexing rules
- Off- and on-line information retrieval

8-1

The introduction of new technologies has led to an increase in the development of local, national and international bibliographic databases. The aim of this session is to show that within a computerised database, subject analysis and information retrieval cannot be effective without standardisation. To do this we are going to examine the topics on the overhead transparency.

The term INFORMATION SERVICE is used to describe any form of library or other information service. The term INFORMATION SYSTEM is used to describe two or more information services that co-operate in resource sharing.


STANDARDISATION IN SUBJECT ANALYSIS - 1
stored information
new information
"Could I have some information, please?"
selection/ retrieval
selection/ SDI
8-2

OHT 8-2

The selection of information to meet users needs is a process of comparison. The information that the user wants is compared to the information from the past and the present that is available. It is a major requirement of information specialists that they can make such comparisons effectively. This involves analysing both the subject of the inquiry and the information available.

But users cannot always express their requirements precisely or do not always know exactly what they require. And the information available continues to grow both in scale, in range of formats and complexity of access. Therefore the information specialist has an important role to play as long as there are users requiring information.

OHT 8-2 continued on back...

OHT 8-2 continued.

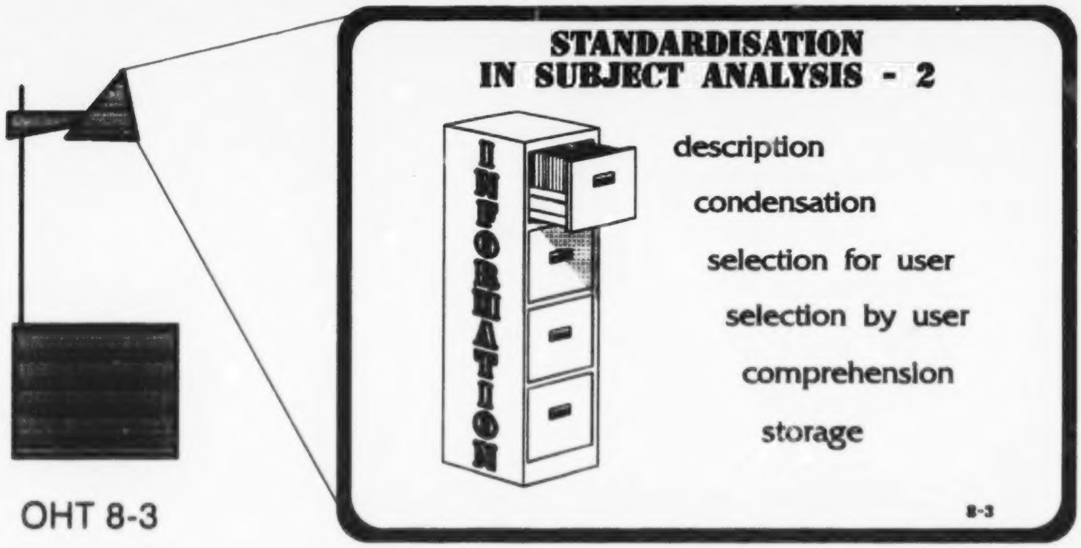
But this will only be true as long as information specialists understand the wide variety of sources of information - understand their users and their changing needs - are able to link the two together - and are able to use the equipment and software that is increasingly associated with information.

NOTE. The Instructor may wish to discuss the future role of the information specialist, using examples taken from the fields the participants are familiar with.

Standardisation clearly has implications here, especially when computerisation has taken place. For we can only make meaningful comparisons between things which are uniform, or of the same kind. So the things that are to be compared - information and the users needs or inquiries - should be described using a standard language. And the retrieval of the information required, depends upon a standardised approach by the information specialist.

It would be possible to try a different approach to each inquiry we received. However, this would make our job more difficult and efficiency would decrease. On the other hand, our work would be greatly improved by a degree of standardisation in all the information sources upon which we depend. For if they are all arranged or operate differently, our job becomes much more difficult.

As each information service increasingly depends upon other information services and systems for resource sharing - and as more processes are computerised - standardisation becomes an essential prerequisite.



STANDARDISATION IN SUBJECT ANALYSIS - 2

- description
- condensation
- selection for user
- selection by user
- comprehension
- storage

OHT 8-3

So that the vast quantity of information available can be accessed and compared with the user's inquiries, it is necessary to describe it. For although the best description of the information is the information itself, this does not enable us to access it easily. Information specialists have developed a number of techniques for describing information - some relate to the CONTENT of the information, as in abstracts - some relate to the SUBJECT of the information, as in classification. Whenever information is described, it is reduced or condensed to make it easier to manage.

OHT 8-3 continued on back...

OHT 8-3 continued.

When seeking information in response to an inquiry, information specialists will usually turn to some form of description of the information first. From these descriptions, they will select the information they think will help the user. Users will then again select what they want from this material. They will then read, watch or listen to the information - gain understanding - and probably again condense what they have learned before they store it.

When describing the CONTENT of information, it is vital that the condensed version should preserve the main content of the original. It should also make it easier to handle. This can be ensured by standard methods of condensation which should produce standardised content surrogates, such as ABSTRACTS, DIGESTS and REVIEWS.

OBJECTIVE 1. TO EXAMINE THE IMPLICATIONS OF STANDARDISATION ON ABSTRACTING / CONTENT SURROGATES

OHT 8-4

CONTENT SURROGATES

- describe, not replace
- published with original or in abstracting / indexing service
- different degrees of condensation
- are:-
  - contents lists
  - abstracts
  - summaries
  - reviews
  - digests
  - extracts

8-4

NOTE - in a seminar session the Instructor may wish to show examples of the various types of content surrogates to participants and discuss the way they are prepared, their various features, differences and problems of use.

Content surrogates generally do not replace the original document. They indicate the content of the original to let the user decide whether to use or not.

They usually consist of the bibliographic data of the item, the text of the surrogate and appropriate retrieval tools such as notations or descriptors.

They can be published together with the original, or more normally they are published in separate publications with other similar content surrogates. Or they may be contained in a computer data-base from which they can be retrieved.

OHT 8-4 continued on back...

OHT 8-4 continued

The degree of condensation can vary, and they may use terms selected from a controlled vocabulary. They usually describe one, or sometimes two or more related documents.

There are various types of contents surrogates - the major forms are listed on the overhead transparency. It is important for all information users that abstracts and other content surrogates follow a more or less standardised structural pattern.

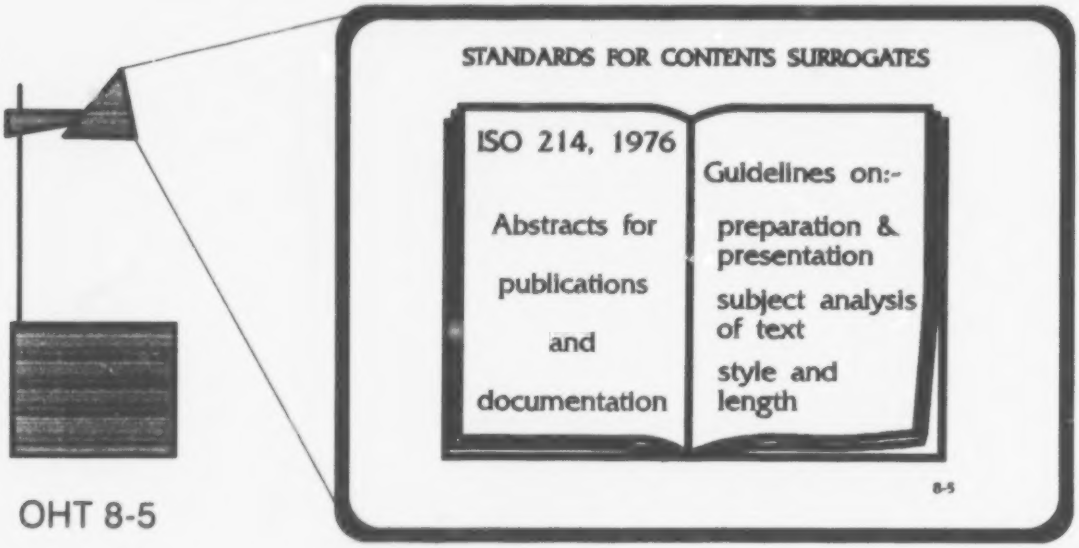
NOTE. By the time this Module is used it is anticipated that most participants will be familiar with the various forms of contents surrogates and retrieval languages. Instructors may therefore wish to miss out the following descriptions or use them briefly as reinforcement.

CONTENTS LISTS include the regular publication of the contents of a specified collection of periodicals. This means that the user no longer has to search through each separate periodical as it comes out for items of interest.

An ABSTRACT is a precis or a summary of an original item. An abstract can be short and indicative, or long and informative. It may be descriptive or critical. It may be prepared by the author of the original, by an editor or an abstracter. Abstracts are usually collected together and published by some form of abstracting or indexing service.

SUMMARIES are the restatement of the findings within the original document. REVIEWS may contain a summary of the original, but include evaluation and criticism. DIGESTS are long summaries that may act as substitutes for the original document for some users. EXTRACTS are similar to digests but the text is taken from the original document by 'quoting' rather than by condensing.

REVIEW ARTICLES and PROGRESS reports condense the content of various documents on the same subject. They give a state of the art review of the subject.



OHT 8-5

STANDARDS FOR CONTENTS SURROGATES

ISO 214, 1976

Abstracts for publications and documentation

Guidelines on:-

- preparation & presentation
- subject analysis of text
- style and length

8-5

International standard 214, published in 1976, is the basic standard concerned with abstracts. [63]

It contains guidelines on their preparation and presentation - on the subject analysis of the text to be abstracted - and on their style and length.

Other more detailed rules for preparing and presenting abstracts, annotations and digests are included in some national and regional standards. These also cover related procedures such as bibliographic data presentation, transliteration, and the use of symbols and abbreviations.

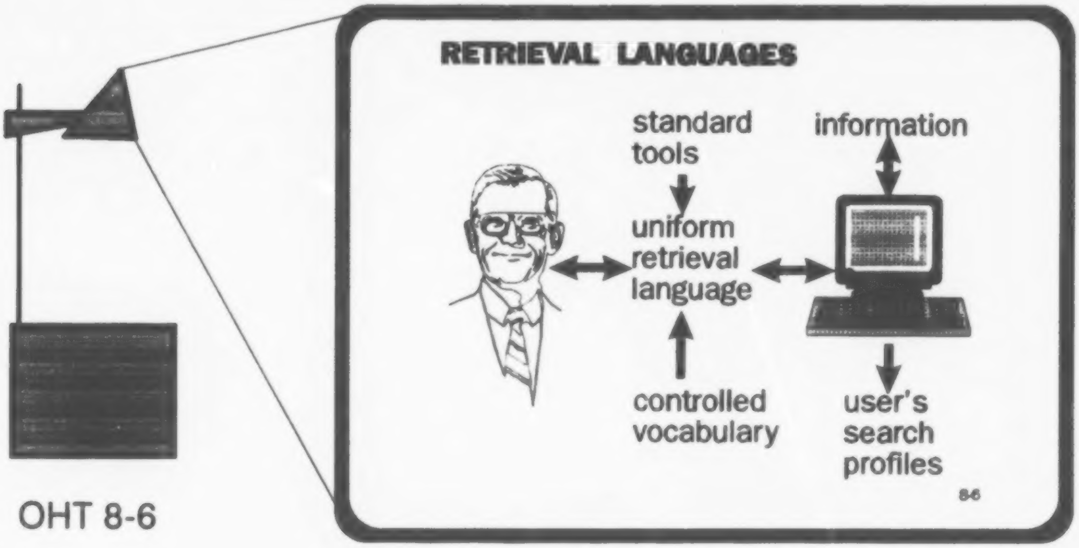
OHT 8-5 continued on back...

OHT 8-5 continued.

However the main sources of information for those preparing these content surrogates are the rules and guidelines issued by the various abstracting and indexing services. Similar guidelines are issued by work sharing international information systems, such as INIS, the International Nuclear Information System. These usually bring together appropriate national and regional standards.

Numerical data from publications can also be included in contents surrogates. It can be made accessible by data flagging and tagging, particularly within a computer database. It may be necessary to refine, reduce or review such material. No specific standards exist to help those undertaking such work. However, standard methods are described in many publications of professional bodies. These include the International Council of Scientific Unions Committee on Data on Science and Technology, known as ICSU-CODATA - and the American Society for Testing and Materials, ASTM.

The consolidation of information - where contents surrogates are combined in one place for specific user groups - usually means more than just condensing it. Such a process usually involves taking information from selected original sources, condensing, repackaging and evaluating it for a special user group. It is important when consolidating information in this way that a standardised approach should be taken, particularly in relation to all references and other bibliographic data.



RETRIEVAL LANGUAGES

standard tools
uniform retrieval language
controlled vocabulary
information
user's search profiles
8-6

OHT 8-6

We have seen that stored information is retrieved after the inquiry has been compared with the information that is available. Using traditional methods, information professionals develop similar but sometimes individualistic approaches to this work.

However, when retrieving information from a computer database, a standardised approach is necessary for all information professionals. An individualistic approach will no longer achieve the results required. Such a standardised approach will include the use of a homogeneous or uniform retrieval language. This will incorporate a controlled vocabulary and standard tools to express the relationship of terms.

T 8-6 continued on back...

OHT 8-6 continued.

This language, with its controlled vocabulary and standard tools, is needed to prepare a user's search profile. This statement of the user's needs or inquiry has to be correctly prepared in the language the computer will understand. Only then can it be compared automatically with the stored information originals or their descriptions in the database.

Retrieval languages are also called documentary, search or indexing languages.

OHT 8-7

TYPES OF RETRIEVAL LANGUAGES

1. MAY VARY

in vocabulary control, arrangement, expressing concepts / relationships, subject fields

2. MAIN TYPES

classification schemes, or natural language based

3. MAY BE

mono / multilingual; general / specialised; or single / multi system

8-7

Retrieval languages may vary from each other in a number of ways. Some of these are shown on the overhead transparency. A number of examples will illustrate this.

Some use synonymy - the use of words denoting the same things as another - while others use polysemy - a multiplicity of meaning - as a means of vocabulary control. The arrangement of entries in the vocabulary may vary. Some use natural language to express concepts, such as lists of subject headings or thesauri. Others use alphanumeric or numeric notations. They may be designed for use in many different subject fields.

For example, in the Library of Congress and Dewey classifications, notations represent the subjects in the classification schemes. These notations are language-independent. That is, they are the same regardless of the language of the information service using the classification scheme. This gives such internationally used classification systems an element of standardisation. [49, 47]

OHT 8-7 continued on back...

OHT 8-7 continued.

Depending on how widely it is used, both the vocabulary and the rules of a retrieval language may become a generally accepted or a formally adopted standard. This may take place on a national or an international scale.

These and other standard schemes are designed to ensure compatibility and the effective use of the retrieval languages by all who use them. This is achieved by standardising their development, preparation, presentation and use.

However, any information service which uses its own unique retrieval language is in fact creating its own standard - even though it may be used in-house only. It would be most unfortunate if an information service took a decision to design and apply a unique language today. For it could well be involved in some form of resource sharing in the future. And the use of different retrieval languages by various resource-sharing institutions, creates serious constraints. These adversely affect networking, systems interconnection, the downloading of parts of 'foreign' databases, and other areas.

OBJECTIVE 2.1. TO EXAMINE THE IMPLICATIONS OF STANDARDISATION ON CLASSIFICATION SCHEMES

OHT 8-8

RETRIEVAL LANGUAGES -
CLASSIFICATION SCHEMES - 1

1. MAY BE accepted local, national 'standards'

2. SOME formally adopted as national standards

3. SOME general schemes internationally accepted as 'standards' -
UDC, DDC, L of C.

8-8

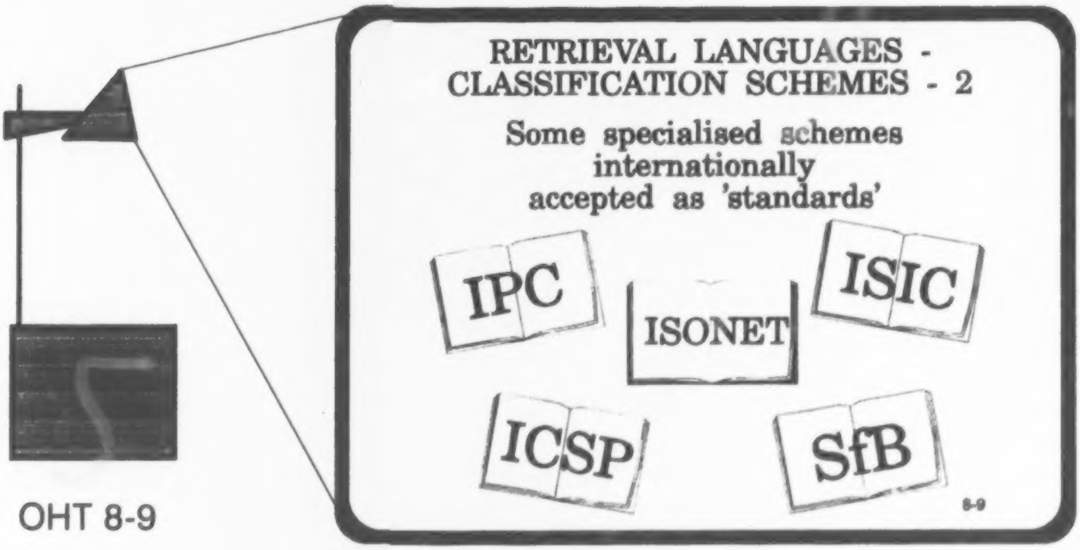
Every classification scheme is in fact a standard, though it may only be the standard for the one organisation that uses it. This is known as a de facto standard, that is it has become a standard whether by right or not. Some classification schemes have been formally adopted as national standards, by the national standards organisation.

A small number of general or universal classification schemes have become so widely used internationally, that they have become accepted as standards throughout the world. These include UDC - the Universal Decimal Classification, maintained by FID - which has been adopted by a number of European countries as a national standard. Other schemes which have become internationally accepted are the Dewey and Library of Congress Classification Schemes.

OHT 8-8 continued on back...

OHT 8-8 continued

The compatibility and effective use of such schemes is ensured as they are maintained and updated by central organisations. But as they have not been formally adopted as international standards, they are still subject to local variations. Such variations can cause some problems when local and national records are made available internationally. [48,47,49]



RETRIEVAL LANGUAGES -
CLASSIFICATION SCHEMES - 2

Some specialised schemes
internationally
accepted as 'standards'

OHT 8-9

Equally, a small number of classification schemes which are universal by subject, but prepared for specific purposes, are also accepted as standards internationally.

These include the International Patent Classification - IPC which is maintained by the World Intellectual Property Organisation, or WIPO. This covers all fields of technology. [I]

The International Standard Industrial Classification, or ISIC, covers all economic activities, and was developed by the United Nations Statistical Office. [I]

The ISONET Classification scheme for standards and other normative documents was developed for use in the International Standards Organisation Information Network. [I]

OHT 8-9 continued on back...

OHT 8-9 continued.

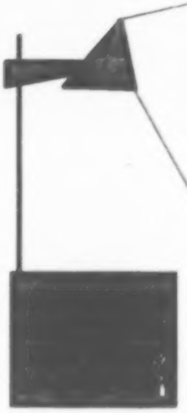
A small number of specialised classification schemes designed to deal with specific subjects or scientific disciplines, have also been accepted internationally. Such systems can be subject orientated, covering a specific scientific discipline or area within a discipline. Or they may be mission-orientated, being developed and used by a system with a specific goal, including AGRIS and INIS.

There are two good examples of subject orientated schemes. The International Classification System for Physics was prepared by the major abstracting services covering physics. The original SfB Classification system covering all aspects of building, was prepared by the Cooperative Committee for Building Problems.

The views of some information professionals - that classification schemes are obsolete when used in conjunction with computerised retrieval - are not justified. For the different types of retrieval languages are of equal importance, although they have different roles, advantages and disadvantages. The best results can be achieved if a combination of classification schemes and natural language based retrieval languages are used.

NOTE. In a seminar session, Instructors may wish to show participants examples of the various classification schemes discussed with which they may not be familiar, examining their application and use.

OBJECTIVE 2.2. TO EXAMINE THE IMPLICATIONS OF STANDARDISATION ON NATURAL LANGUAGE-BASED VOCABULARIES AND INDEXING TOOLS SUCH AS SUBJECT HEADINGS, THESAURI, ETC.



OHT 8-10

RETRIEVAL LANGUAGES -
NATURAL LANGUAGE BASED - 1

MAIN TYPES

- SUBJECT HEADINGS LISTS
- LISTS OF KEYWORDS
- Thesauri

SUBJECT HEADINGS accepted as 'STANDARDS'

- Sears, Library of Congress

8-10

There are several different types of natural language based retrieval languages. The main forms are shown on the overhead transparency. We will examine thesauri on the next transparency.

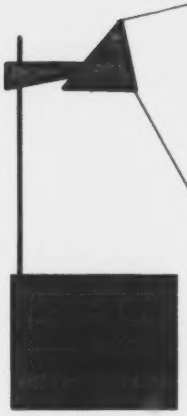
Lists of Subject Headings, Lists of Keywords and similar controlled vocabularies are not covered by any formal international standards. However, the preparation of such lists would be influenced by standards containing rules for indexing.

OHT 8-10 continued on back...

OHT 8-10 continued

Subject Headings and Keywords are normally prepared for specific, rather than general purposes. For example, a list of Subject Headings would be prepared for the catalogue of a particular library to meet its unique requirements. So even at a national level, it would be almost impossible to fully standardise their preparation.

However, some guidelines on the selection of subject headings do exist. The Sears List of Subject Headings is used by many public libraries internationally. It can in fact be considered as a de facto standard. Similarly the Library of Congress Subject Headings, which are widely used by those using the printed catalogue cards or machine readable records of the Library of Congress. [51,50]



OHT 8-11

RETRIEVAL LANGUAGES -
NATURAL LANGUAGE BASED - 2

MAIN TYPES

- Subject headings lists
- Lists of keywords
- THESAURI

STANDARDS FOR THESAURI ONLY

- ISO 2788
- ISO 5964

8-11

Thesauri are now covered by international standards. As well as being used for co-ordinate indexing, they are being used in computerised retrieval, interactive searches, in compiling users profiles and in search strategies.

ISO 2788, published in 1986 and a revision of a 1974 standard, is entitled 'Guidelines for the establishment and development of monolingual thesauri'. [64]

ISO 5964, published in 1985, is entitled 'Guidelines for the establishment and development of multilingual thesauri'. [65]

Thus both mono and multilingual thesauri are covered, and both standards are based on guidelines prepared by Unesco. [66]

OHT 8-11 continued on back...

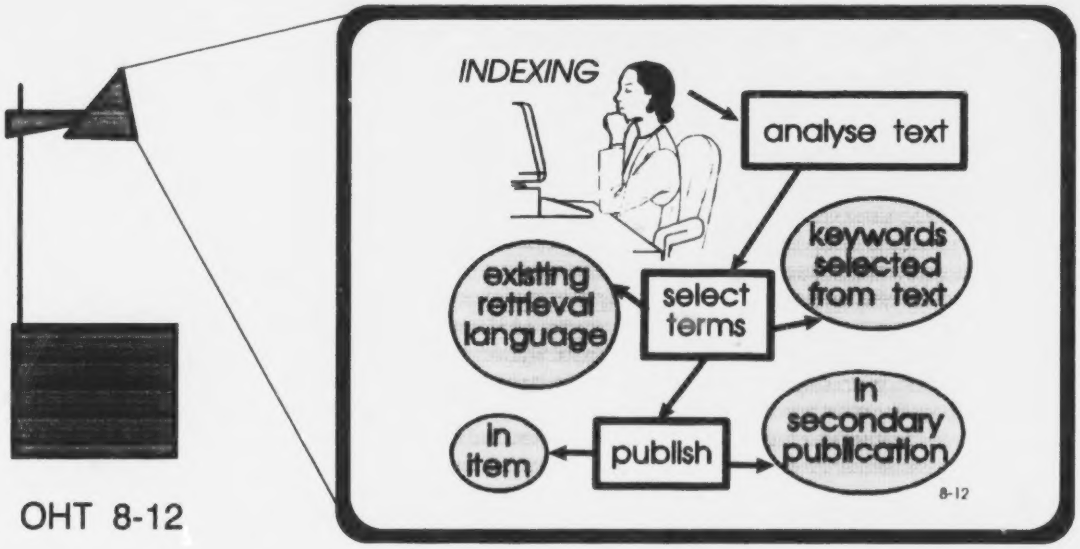
OHT 8-11 continued.

Such national and regional standards on thesauri that do exist, follow the international standards, but contain more detailed regulations to meet local needs.

Some thesauri, although they are not themselves formally adopted as international standards, do tend to have a unifying effect amongst those information services and systems which use them. Two examples include the 'Thesaurus of Engineering and Scientific Terms' or TEST, prepared by the Engineers Joint Council in the United States - and the 'Thesaurus of Development Terms' prepared by UNIDO. [I]

In international information systems, the thesauri used become the standard for all the members of that system. Some co-operative information systems of country groupings have prepared mono- and multi-lingual thesauri for use in participating organisations in member countries. An example is the Macrothesaurus, a 'basic list of economic and social development terms' developed by the Organisation for European Economic Development or OECD. [I]

OBJECTIVE 3. TO EXAMINE THE IMPLICATIONS OF STANDARDISATION ON INDEXING RULES


INDEXING
analyse text
existing retrieval language
select terms
keywords selected from text
in item
publish
in secondary publication
8-12

OHT 8-12

Indexing consists of two stages. The first is the analysis of the text of the document, to determine its subject. The second is the selection of terms, to express the subject in condensed form. This second stage can be done in two ways. One is to select terms from an existing retrieval language. The other involves using keywords selected from the text of the document.

Both methods are taken into consideration in the international standard covering indexing rules. International standard ISO 5963 is entitled 'Methods for analysing documents and determining their subject and selecting indexing terms', and was published in 1985. [67] This standard was based on the earlier 'Guidelines for indexing principles' issued by Unesco in 1975.

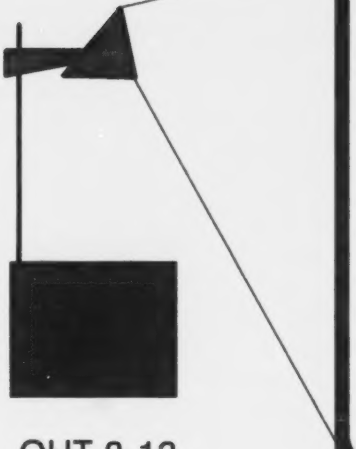
OHT 8-12 continued on back...

OHT 8-12 continued

Printed indexes themselves also appear in two forms. The first is where the index is included in the publication itself to enable the various subjects covered to be found. The other form is that of a secondary publication informing users about the contents of a range of primary publications.

Indexes of primary publications are covered by ISO 999, entitled 'Index of a publication', published in 1975. [68]

Indexes as secondary publications are now normally produced with the aid of a computer. There is no standard in existence which covers such indexes. However, a number of internationally available indexes have established de facto standards on which the production of other secondary indexes can be based.



OHT 8-13

COMPUTERISED AUTOMATIC INDEXING

- frequency analysis of terms
- clustering and cluster-analysis
- use of vocabularies
- use of abstracts

Each system uses its own standards

8-13

Computerised or automatic indexing is now being increasingly used. Text is analysed and index terms selected by a number of techniques. These include the analysis of the frequency of use of terms and the cluster analysis of terms. The computer makes use of vocabularies of significant terms, and of abstracts prepared by man or machine following specific rules.

There is no international standard covering this work, so each system creates its own standards.

OHT 8-13 continued on back...

OHT 8-13 continued

However one system developed by the British Library called PRECIS- Preserved Context Indexing System - is now used extensively internationally. PRECIS is used for the preparation of indexes and the generation of thesauri. Because of its international uptake, it is creating a de facto standard. [69]

OBJECTIVE 4. TO EXAMINE THE IMPLICATIONS OF STANDARDISATION ON COMPUTERISED INFORMATION RETRIEVAL.

OHT 8-14

COMPUTERISED INFORMATION RETRIEVAL

On-line or off-line

Standards have been developed for communication:-

- between man / machine
- between client and host
- within the network

Called Command Languages

8-14

Computerised information retrieval from a centralised database can be undertaken off-line, or on-line. On-line is always to be preferred, as it can be undertaken immediately in response to a user's inquiry.

Off-line would have to be considered if the telecommunications systems were inadequate to deal with on-line access. Off-line means considerable delays in sending user's inquiries, and in waiting for responses. It also means that a failure to analyse the user's inquiry properly in the first place can lead to considerable delays in providing the information required.

In such an information retrieval system, standards concerned with communications between users and machines are being developed. These are in addition to the standards relating to the construction of the database and retrieval languages.

OHT 8-14 continued on back...

OHT 8-14 continued.

These additional standards concern communications between users and computers - between a participant's computer and the central computer - and throughout the network. Communications have to be standardised, otherwise the information system can not function. These standards define a language of commands and answers called the command language of the system.

Some manufacturers of database systems have established their own command language for their system. However, the development of a common command language is taking place within the various co-operative information systems and in ISO. This would enable the various information systems to be interconnected.

One of the Technical Committees of ISO is looking at the production of commands and operational support for users of bibliographic data interchange. This is being undertaken with a view to preparing standards for the interconnection of existing networks. The overall structure for interconnection already exists in ISO 7498 of 1984, entitled 'Information processing systems open systems interconnection'. [70]

Some information services maintain their own computerised databases of predominantly localised information within the institution - that is, in-house. Here the information service would develop its own rules for search profile preparation. These would be greatly influenced by the recommendations of the producers of the database being used and its specific features and by the location of the computer.

It is within the field of computerised retrieval in general - and on-line retrieval using the facilities of networks in particular- where the preparation and use of appropriate standards is an absolute necessity. For the different standards provided by the suppliers of databases create considerable barriers towards effective international information retrieval. And the use of user friendly interfaces that moderate the everyday difficulties to some extent, are but a step towards a permanent solution.

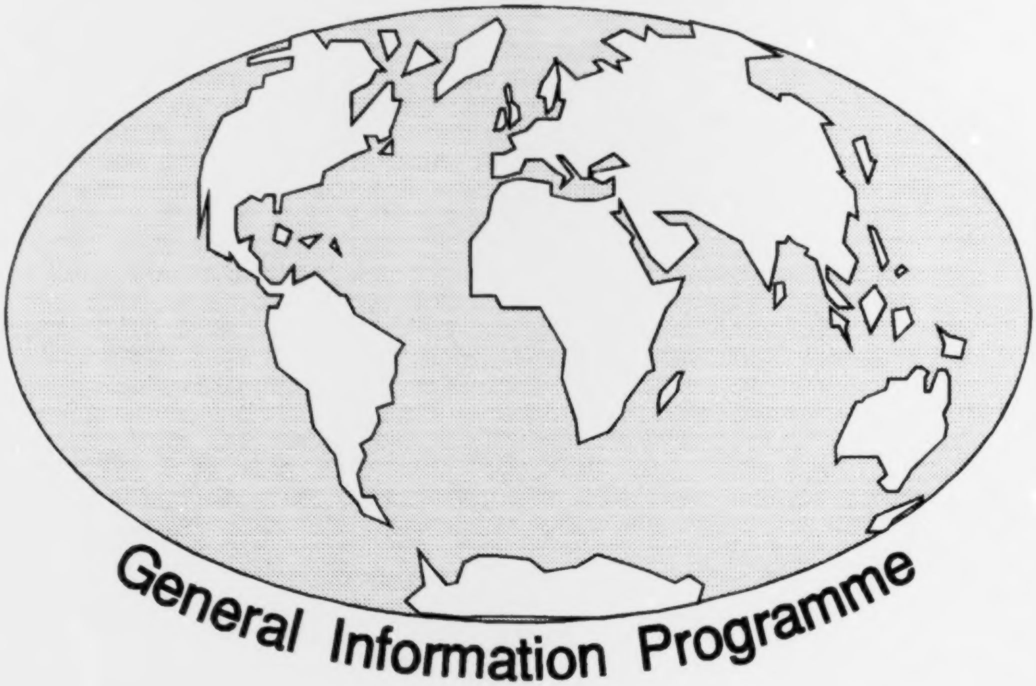
PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package
on
Standardisation in Information Handling

Module 8

Overhead transparency master copies

Photocopy onto plastic sheets approved by the Photocopier Manufacturer ONLY. Copies should be the same size as the originals, with at least a one centimetre margin all round.



SUBJECT ANALYSIS

The implications of standardisation on:-

- ○ Subject analysis
- ○ Abstracting, content surrogates
- ○ Retrieval languages
- ○ Classification schemes
- ○ Natural language based vocabularies, indexing tools
- ○ Indexing rules
- ○ Off- and on-line information retrieval

STANDARDISATION IN SUBJECT ANALYSIS - 1

stored information

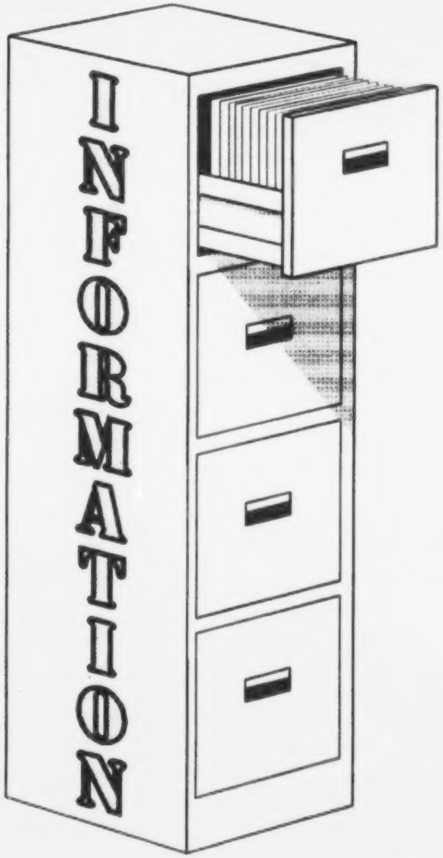
new information

"Could I have some information, please?"

selection/ retrieval

selection/ SDI

STANDARDISATION
IN SUBJECT ANALYSIS - 2



description

condensation

selection for user

selection by user

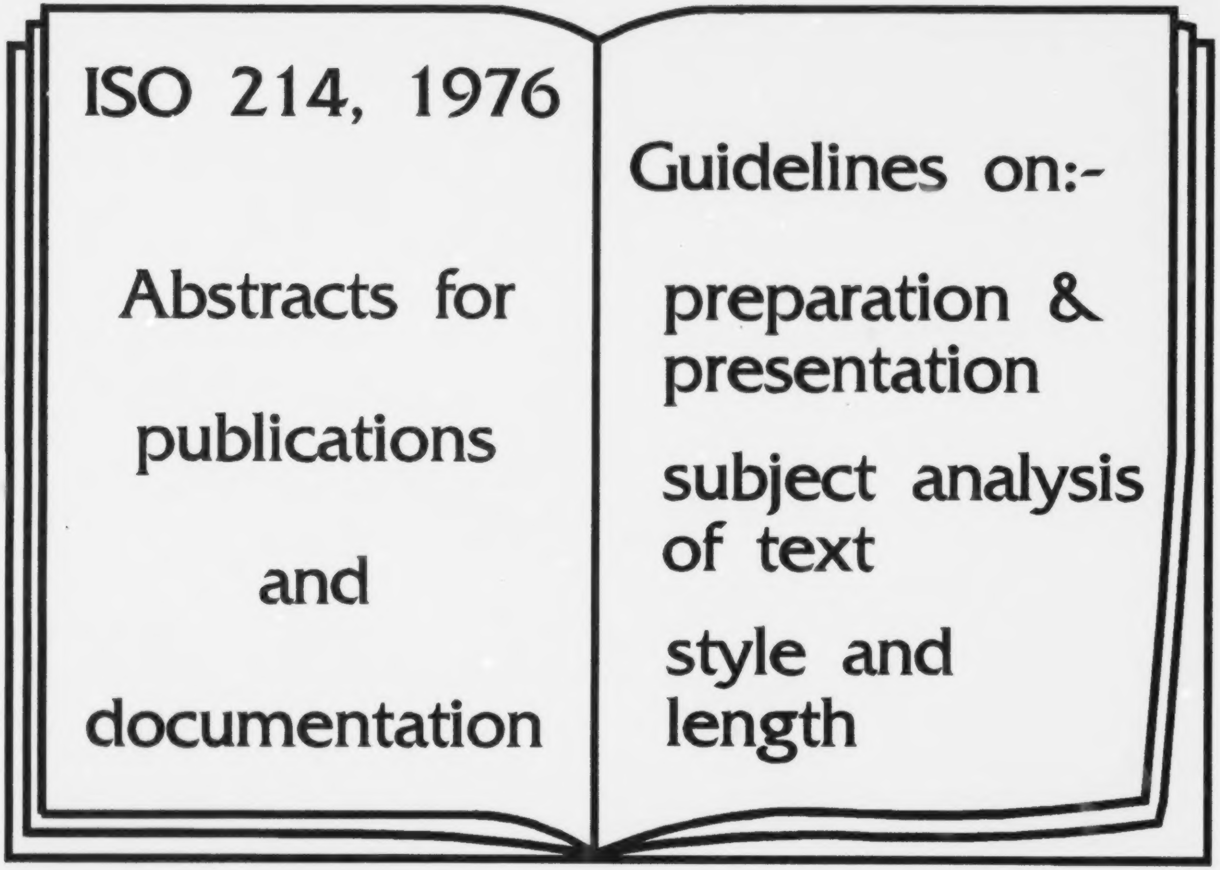
comprehension

storage

CONTENT SURROGATES

- describe, not replace
- published with original or in abstracting/indexing service
- different degrees of condensation
- are:-
    - contents lists
    - abstracts
    - summaries
    - reviews
    - digests
    - extracts

STANDARDS FOR CONTENTS SURROGATES



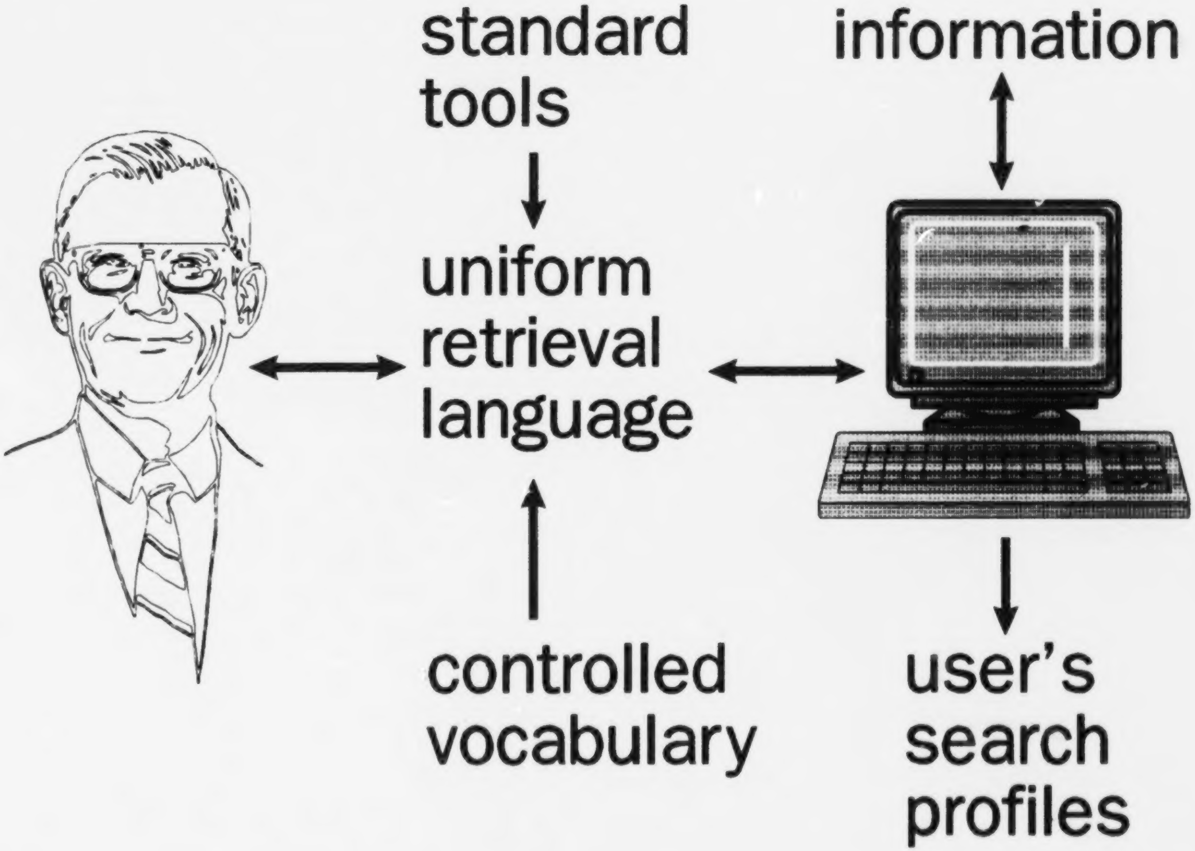
ISO 214, 1976

Abstracts for publications and documentation

Guidelines on:-

- preparation & presentation
- subject analysis of text
- style and length

RETRIEVAL LANGUAGES



standard tools

information

uniform retrieval language

controlled vocabulary

user's search profiles

TYPES OF RETRIEVAL LANGUAGES

1. MAY VARY

in vocabulary control, arrangement, expressing concepts / relationships, subject field

2. MAIN TYPES

classification schemes, or natural language based

3. MAY BE

mono / multilingual, general / specialised or single / multi system

RETRIEVAL LANGUAGES - CLASSIFICATION SCHEMES - 1

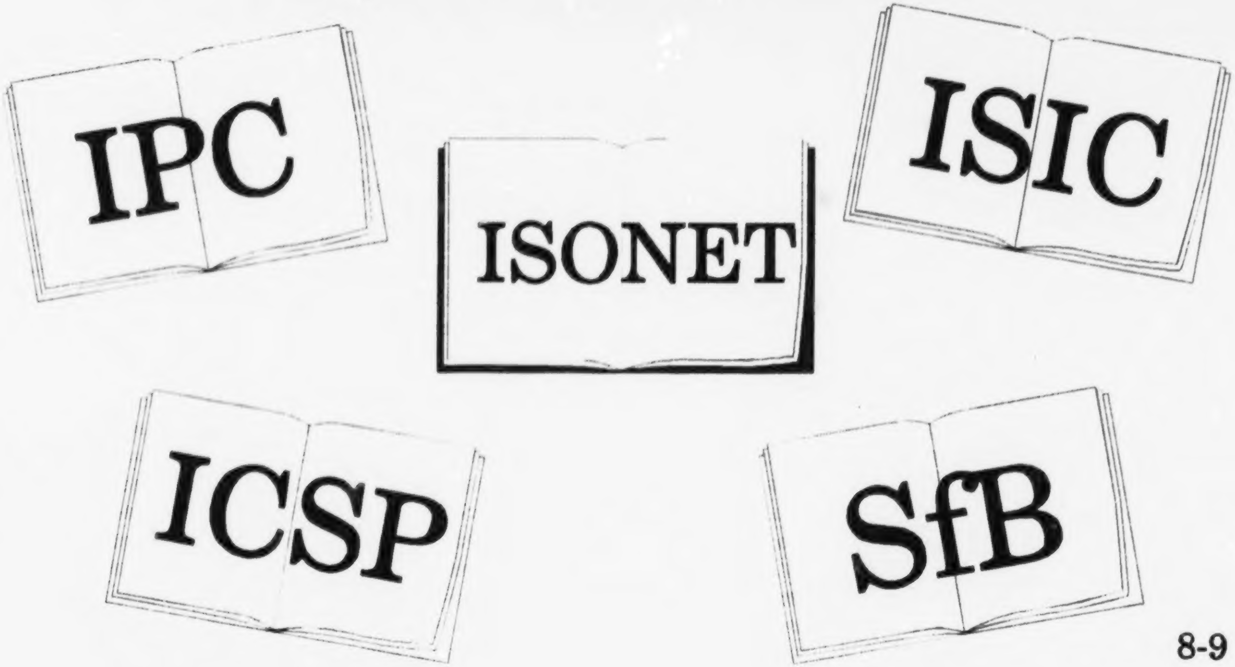
1. MAY BE accepted local, national 'standards'.

2. SOME formally adopted as national standards.

3. SOME general schemes internationally accepted as 'standards'-
   UDC, DDC, L of C.

RETRIEVAL LANGUAGES - CLASSIFICATION SCHEMES - 2

Some specialised schemes internationally accepted as 'standards'


IPC
ISONET
ISIC
ICSP
SfB

RETRIEVAL LANGUAGES - NATURAL LANGUAGE BASED - 1

MAIN TYPES

- ○ SUBJECT HEADINGS LISTS
- ○ LISTS OF KEYWORDS
- ○ Thesauri

SUBJECT HEADINGS accepted as 'STANDARDS'

- ○ Sears, Library of Congress

RETRIEVAL LANGUAGES - NATURAL LANGUAGE BASED - 2

MAIN TYPES

- Subject headings lists
- Lists of keywords
- THESAURI

STANDARDS FOR THESAURI ONLY

- ISO 2788
- ISO 5964

INDEXING

analyse text

select terms

existing retrieval language

keywords selected from text

publish

in item

in secondary publication

COMPUTERISED AUTOMATIC INDEXING

- ○ frequency analysis of terms
- ○ clustering and cluster-analysis
- ○ use of vocabularies
- ○ use of abstracts

Each system uses its own standards

COMPUTERISED INFORMATION RETRIEVAL

On-line or off-line

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- between man/machine
- between client and host
- within the network

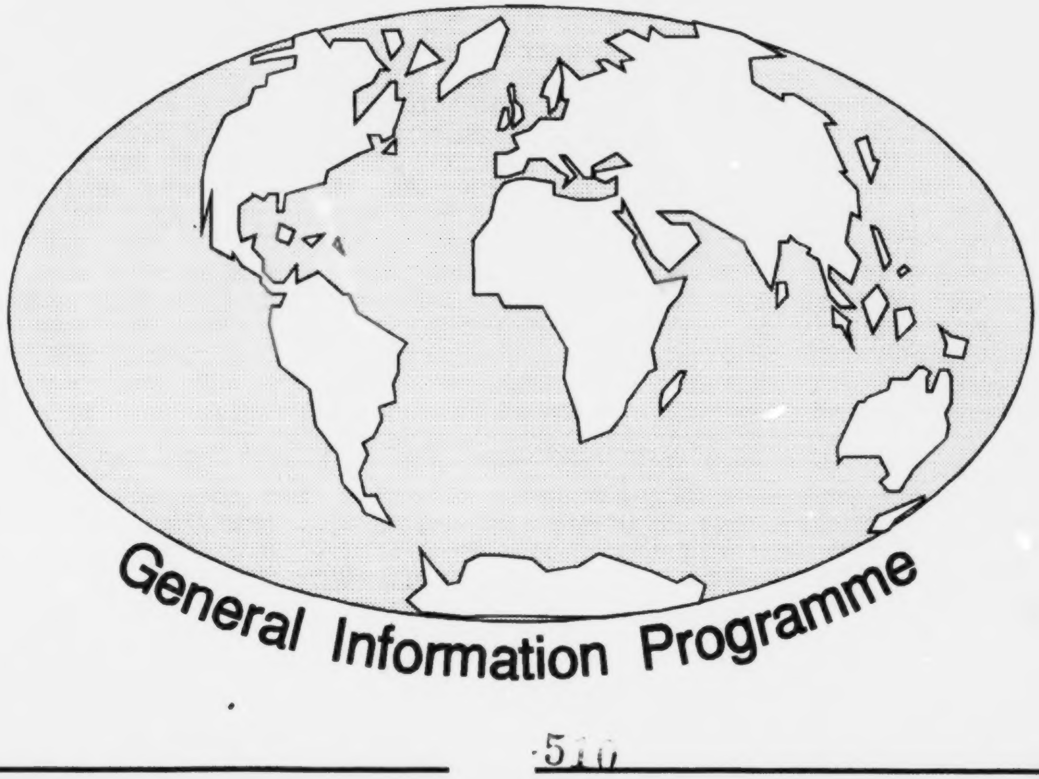
Called Command Languages

PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package on Standardisation in Information Handling

Module 9

Organising national standardisation in information handling


General Information Programme

INSTRUCTORS

PLEASE read **Module 0 - General Introduction to the Teaching Package,** before using this Module. It contains recommendations on how to use the Programme most effectively.

MODULE 0 also contains:

* A list of **ACRONYMS** giving the full titles of organisations referred to in this Teaching Package.

* A **BIBLIOGRAPHY** of documents referred to. These are followed by a [number] in the Module - full details are given in numerical order in the Bibliography.

* **ADDRESSES** of some major organisations denoted by a [letter] in the Module, are listed at the end of the BIBLIOGRAPHY.

* A **GLOSSARY** of computing terminology.

INTRODUCTION TO MODULE 9

This Module is intended to be used MAINLY with professionals from the information community working in areas which involve the standardisation of information.

It attempts to provide librarians, archivists, documentalists etc., with the minimum required methodological and organisational knowledge on national standardisation. This will enable them to work on standardisation in conjunction with other professionals in their own and related fields, for example at the national standards body.

PRIMARY USE. This is as part of a short course or seminar on Standardisation, in which Modules 1 and 2 can also be used as the basis for the introductory sessions to the course.

SECONDARY USE. If given as a lecture to undergraduate or postgraduate students in a library and information science school, it is recommended that they should be ADVANCED students - final year undergraduate, or postgraduate students with specific interests in standardisation or management. It could also be given as a general lecture at the end of a course to reinforce and bring together student's knowledge of the general principles of standardisation.

It is not intended for use as an INTRODUCTORY lecture to the topic. For its detailed and practical content will appear to be less than relevant to the students immediate needs and indeed for some of them, to their foreseeable future requirements. As such there is little or no value in teaching this topic at this stage of their careers. Modules 1 and 2 should be used as introductory lectures, however.

Introduction continued ......

INTRODUCTION TO MODULE 9 continued.

The Module is written in the lecture style common to all the Modules in this Teaching Package. However, when it is used as a component in a short course or seminar on standardisation, it is essential that the Instructor should be fully aware of and experienced in the organisational framework and the procedure that exists in their own country. It may well be necessary to modify the text and some of the names and terms used, to expand the presentation and supply local examples as required.

TIMING

As A Seminar

Modules 1 and 2 should be given as preliminary lectures, followed by this Module when appropriate. With the examination of local documents and discussion, and with the suggested EXERCISES given in the teaching notes or similar exercises designed by the instructor, the three Modules can then form the basis of a one and a half to two days Course or Seminar.

As A Lecture

Given as it stands, this Module will last approximately 40 minutes. If examples of documents are shown by the Instructor it will take correspondingly longer.

AIM

To give participants the methodological and organisational knowledge required when working towards standardisation in the handling of information.

OBJECTIVES

To show:-

1. how work on national standardisation in information handling is interconnected with international as well as national-regional and in-house standardisation.
2. the bodies involved in national standardisation in information handling.
3. the organisational framework for national policy making, planning and preparation of standards, and the promotion of their use.
4. the preparation of standard-like documents.

BACKGROUND READING

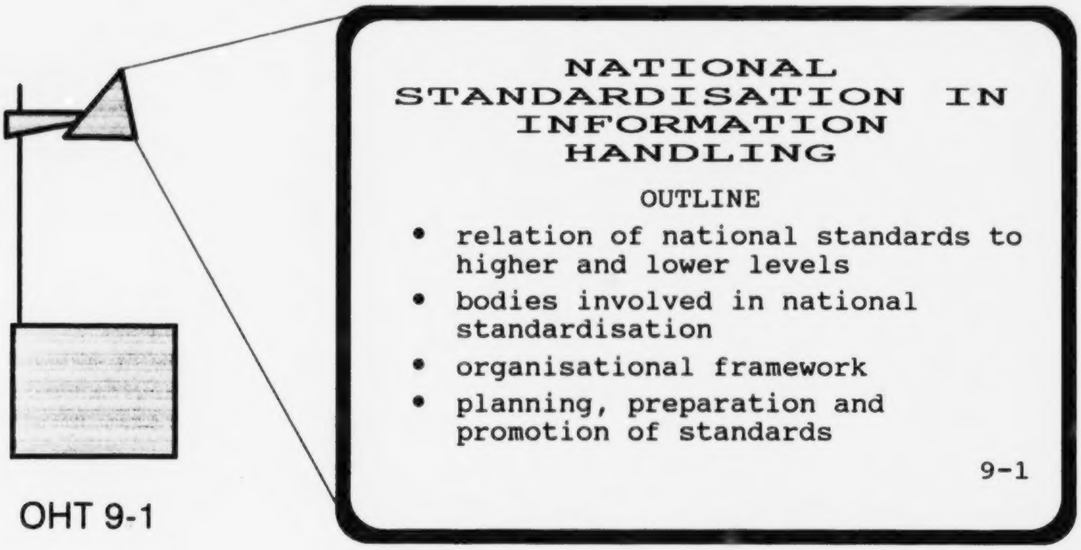
Instructors may wish to consult Walt Crawford's book 'Technical standards: an introduction for libraries' and Henriette Avram's article 'Organisations contributing to the development of library standards' for further information. [1, 2]

RECOMMENDATIONS AND METHODS OF PRESENTATION

As for Module 8. Please refer to 8 - 2 for this information.

TEACHING NOTES

ORGANISING NATIONAL STANDARDISATION IN INFORMATION HANDLING



NATIONAL STANDARDISATION IN INFORMATION HANDLING

OUTLINE

- relation of national standards to higher and lower levels
- bodies involved in national standardisation
- organisational framework
- planning, preparation and promotion of standards

9-1

OHT 9-1

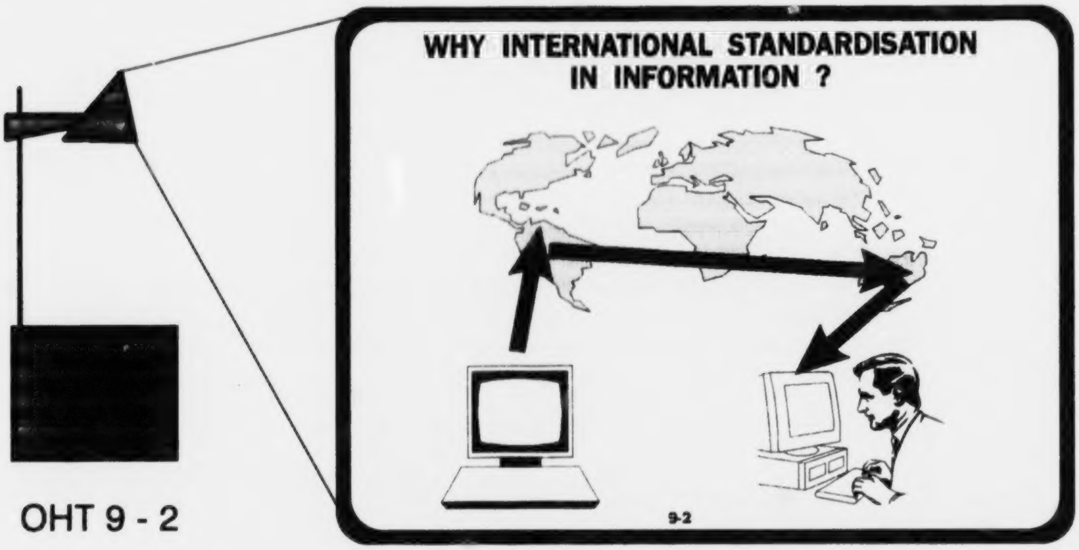
The aim of this Module is to show how national standardisation in information handling is achieved.

To do this it is necessary to examine the topics shown on the overhead transparency.

This Module is concerned specifically with national standardisation IN INFORMATION HANDLING. However, many of the processes we will look at are applicable to national standardisation in other areas as well.

NOTE OHT 9-1 should be discussed and displayed only briefly as it shows the outline of the topics to be covered. There is no need to elaborate on each topic as these are covered in detail in succeeding OHTs.

OBJECTIVE 1. TO SHOW HOW WORK ON NATIONAL STANDARDISATION IN INFORMATION HANDLING IS INTERCONNECTED WITH INTERNATIONAL AS WELL AS NATIONAL-REGIONAL AND IN-HOUSE STANDARDISATION.


WHY INTERNATIONAL STANDARDISATION IN INFORMATION ?

OHT 9 - 2

First it is necessary to understand the relationship between national standardisation and higher level international and lower level national-regional and in-house standardisation.

The information your inquirer needs may not be available within your own service. But it may be available in another! It may not be available in your country, but it may be available somewhere else in the world!

OHT 9-2 continued on back...

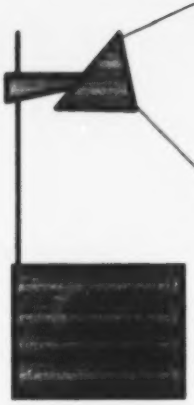
OHT 9-2 continued

Many questions can only be answered when there is effective international exchange of information. International exchange can only take place when international networks are created. BUT the effectiveness of international networks depends on how easy it is to 'connect' different national networks together to move information from one to another.

So there can be major problems in the international exchange of information and networking! For the successful interconnection of different systems is only possible when all the processes and systems involved follow COMMON or at least COMPATIBLE STANDARDS on an international scale.

Therefore international standards should be used in all countries to achieve compatibility in information handling, to make the exchange of information possible.

If no International Standard exists and the need is urgent, then other documents should be considered. These would include existing national standards, international standard-like documents and any preparatory work for an international standard. For new international standards should be based on existing national standards and vice versa.



OHT 9 - 3

Roles And Levels Of Standards

International Standards

- overall, international rules

National Standards

- international rules adapted to meet national needs OR
- general national rules

Regional / In-House Standards

- national rules adapted to meet local needs
- local detail and practices

9-3

National Standards, (as we have seen in Module 1) are necessary to ensure that international standards are used and adapted to a form that meets national requirements.

(FOR EXAMPLE - Language, terminology, adaptation to country's needs and customs, etc. SEE OHT 1-9.)

National Standards however, should not include rules relating to minute details or specific matters. For these may vary from one part of the country to another, or from one organisation to another. National Standards cannot deal with all possible local variations.

Rules relating to local variations should be included in national-regional standards, branch or in-house standards or other normative documents. But they MUST adhere to the general rules set by the National Standard. These STANDARD-LIKE DOCUMENTS will be issued by the STANDARDISING BODIES.

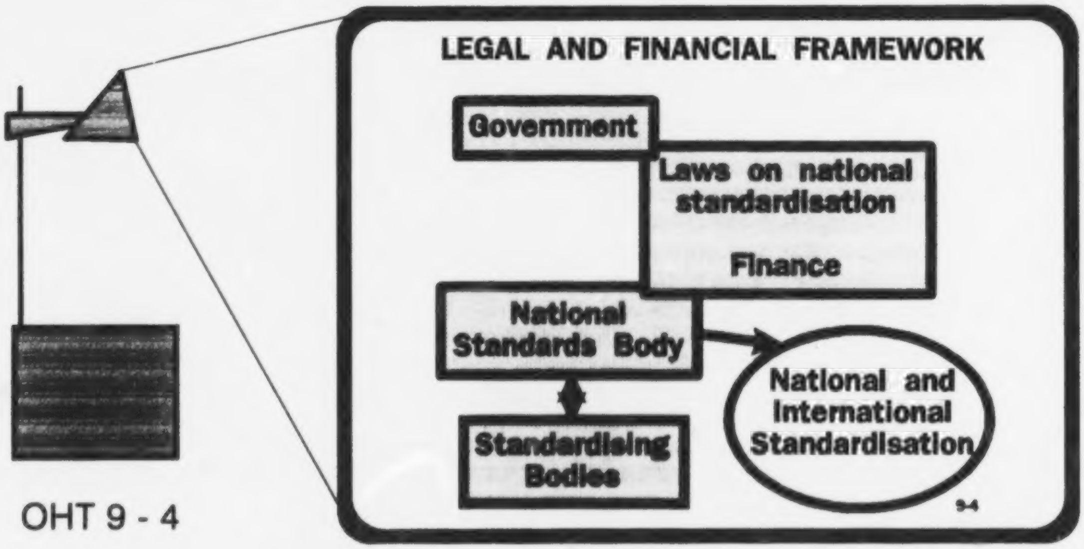
OHT 9-3 continued on back...

OHT 9-3 continued

Standard-like documents can also cover procedures for which it is not yet necessary to prepare a national standard, or where instruction rather than regulation is required.

National standards should be applied by all those required to do so, following the rules of the organisations they work for.

OBJECTIVE 2. TO SHOW THE BODIES INVOLVED IN NATIONAL STANDARDISATION IN INFORMATION HANDLING


LEGAL AND FINANCIAL FRAMEWORK
Government
Laws on national standardisation
Finance
National Standards Body
National and International Standardisation
Standardising Bodies
9-4

OHT 9 - 4

Standardisation should have a legal framework established by law. This will define the role of national standardisation and the binding force of standards. This law should also authorise the national standards body to prepare and issue national standards. It will also be necessary to have a legal framework for the national information system.

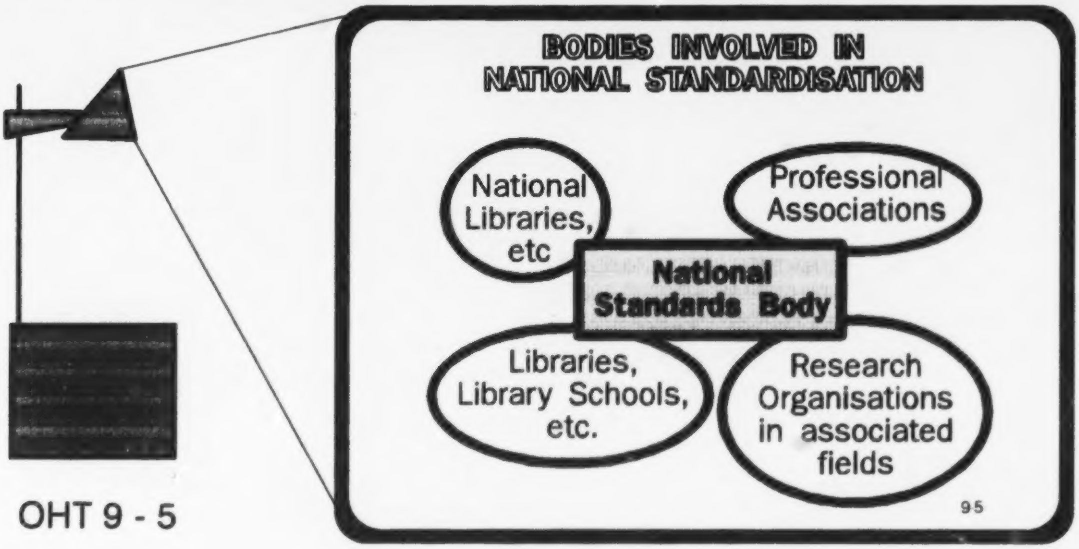
The administration of the standardisation programme should be financed by the national standards body. Where appropriate, governmental or central bodies in charge of the national information system may also contribute. This should cover participation in international standardisation as well as in national standardisation.

OHT 9-4 continued on back .....

OHT 9-4 continued.

The costs of participating in a national standardisation programme should be born by the participating and standardising bodies involved.

Standardisation is a costly activity. However, cost-effectiveness should be one of the benefits gained once standardisation is achieved. It is costly because of the administrative costs of the large numbers of experts involved. It also appears costly because of the necessary changes in procedures, working tools and so on that are often felt to be caused by standardisation. In fact, standardisation simply shows up the changes caused by developments in technology, etc.



BODIES INVOLVED IN NATIONAL STANDARDISATION

National Libraries, etc

Professional Associations

National Standards Body

Libraries, Library Schools, etc.

Research Organisations in associated fields

OHT 9 - 5

The National Standards Body (i.e. ....) should be the centre of national standardisation in the field of information. [3]

But this field of standardisation is somewhat different from the more typical areas of industrial standardisation normally dealt with. Therefore the National Standards Body needs the help and support of professional and other bodies in the field of information. This achieves a real consensus of opinion and publicises the standards produced amongst those organisations.

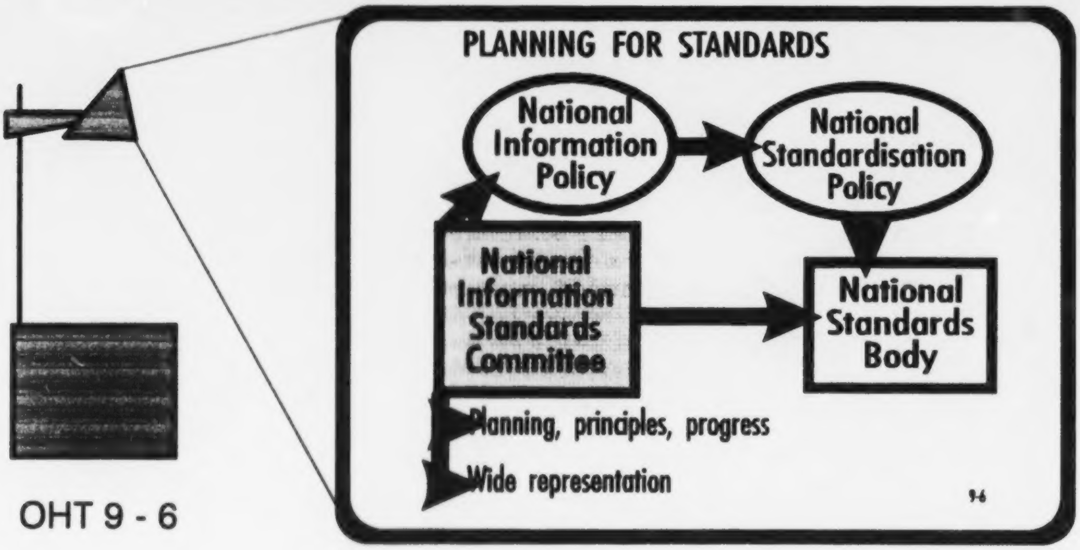
OHT 9-5 continued on back...

OHT 9-5 continued

In exceptional circumstances, it may be necessary for another organisation to start the essential work of standardisation in information handling - for example, a professional body or a governmental body in charge of national information policies. This should happen if the national standards body is not interested or is unable to play a central or important role. In such a case a programme of standardisation should be undertaken by an appropriate body working with others in the field. Efforts should then be made to get the national standards body involved gradually.

Professional or governmental bodies that would assist national standards bodies include national libraries, bibliographic agencies, archives or information centres; professional associations of those involved in information handling and publishing; education and training institutions in information sciences; and libraries and other information services. Some of these may also act as STANDARDISING BODIES.

Other bodies that could also be expected to assist would include national centres and research bodies in the fields of computing and reprography, and others in appropriate subject fields.



OHT 9 - 6

PLANNING FOR STANDARDS

National Information Policy
National Standardisation Policy
National Information Standards Committee
National Standards Body
9-6

- Planning, principles, progress
- Wide representation

General access to information and its effective use requires a co-ordinated NATIONAL INFORMATION POLICY. [71]

But a national information policy must necessarily include standardisation if it is to be effective. For standardisation enables the development and co-ordination of a national information system.

Equally the effective preparation and application of standards in information requires a co-ordinated NATIONAL STANDARDISATION POLICY.

The effective use of information affects virtually every area of a country's social and economic structure. Because of this, the actual standardisation of information handling is not something that can be undertaken by one organisation WORKING ALONE. Again, the national standards body requires the help and support of professional and other bodies in the field of information to do this work.

OHT 9-6 continued on back.....

OHT 9-6 continued.

But the setting up of a National Information Standards Committee is recommended for POLICY MAKING, PLANNING AND CONTROLLING THE PROGRESS of standardisation. Such a Committee would be administered by the national standards body. Failing that, it could be administered by a governmental agency in charge of information policy, or by one of the major standardising bodies.

Such a National Committee should be composed of members with expert knowledge in information handling. They should represent as many as possible of the professional and governmental bodies in the various areas of information activity.

The National Committee should be managed by a steering committee made up of the Chairperson, Vice-chairpersons, Secretary (Rapporteur) and committee members representing the organisations of primary importance. The Committee should have close links with policy making bodies in charge of the national information system. Its importance must be recognised if it is to be effective.

OBJECTIVE 3. TO SHOW THE ORGANISATIONAL FRAMEWORK FOR NATIONAL POLICY MAKING, PLANNING AND PREPARATION OF STANDARDS, AND THE PROMOTION OF THEIR USE.

OHT 9 - 7

NATIONAL INFORMATION STANDARDS COMMITTEE

Policy And Planning

- **standardisation policy**
  - long term plan
- **medium term plan**
  - programme for 4 / 6 years
- **short term plan**
  - one years operations

9-7

The National Information Standards Committee would prepare long, medium and short term plans for national standardisation in information handling. The Committee would define the principles for national activities in international standardisation and monitor progress in the preparation and application of standards.

Effectively, the long term plan is created when defining the standardisation policy. The policy should lay down the main areas where standardisation is needed, and list priority areas. It should create a framework in which organisations can participate in information standardisation. It should specify how standards are to be prepared, promoted and applied.

OHT 9-7 continued on back...

OHT 9-7 continued

Medium term plans are then based upon the long term plan. These will be prepared to cover the programme of activities for four to six years ahead.

For each year a short term operational plan should be prepared.

OHT 9 - 8

National Information Standards Committee

Medium And Short Term Plans

Preparation of draft plan
- publicity, discussion, amendment
- approval by National Committee
- publicity

Guide-line for short term planning
- short term plan

9-8

A number of factors have to be taken into account when preparing draft medium term plans. These would include those areas requiring standards and the priorities stated in the standardisation policy. Forecasts and trends in the development of information resources and technology would be considered. The needs expressed by experts in the information field have to be taken into account. Work already in progress both at international and national levels would be incorporated. Reviews of existing standards prepared five years earlier would be timetabled.

Extensive publicity should be given to the draft medium term plan so that it can be discussed as widely as possible. After discussion and amendment, the medium term plan should be approved by the National Committee. It should then be publicised and used as the guide-line for short term planning and action.

The medium term plan should contain information on standards to be prepared and reviewed during the period of the plan. This would include the title of the standard, a short description of contents and the principles to be followed. References to existing international, regional, in-house and other standards and standard-like documents would be given. The plan would also recommend authors and the membership of the expert committee to undertake the work, if appropriate. Target dates for the completion of the work would be set.

OHT 9-8 continued on back...

OHT 9-8 continued

The short term plan is designed to cover operations in the following year. It is based on the structure of the medium term plan, but takes into account progress achieved in previous years.

It develops the information contained in the medium term plan. For at this stage it is possible to give exact details of those people participating in the preparation or revision of individual standards. It can give more accurate deadlines for the various phases of a standard's preparation.

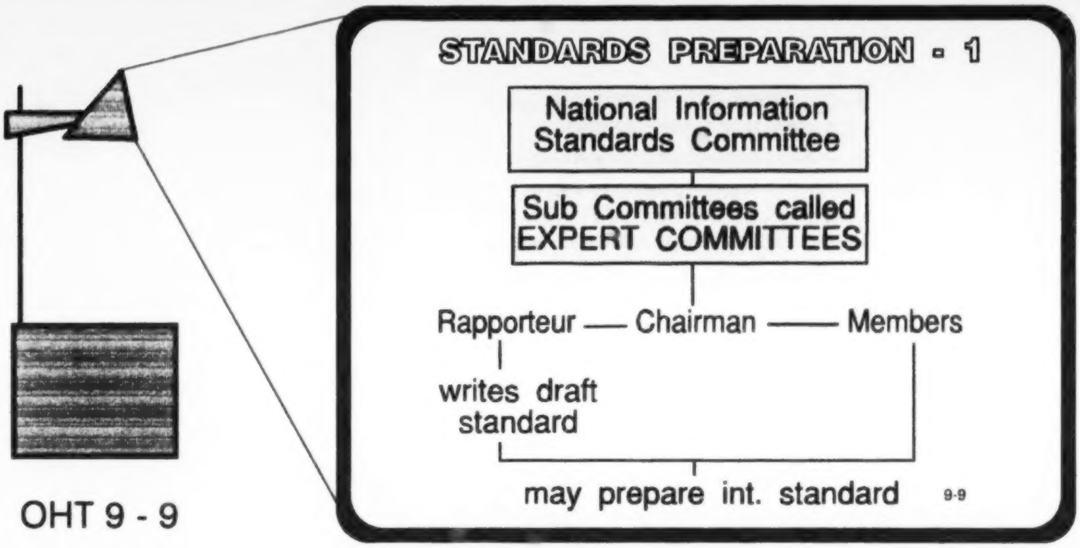
It can also include any changes from the medium term plan, such as new or deleted items, or altered objectives.

The National Information Standards Committee should meet at least once a year to consider progress reports made by the national standards body and/or the steering group of the Committee.

These reports should enable it to review the progress made in the preparation and revision of national standards and in their promotion and use. At the same time it should examine the participation of the country in international standardisation.

The Committee will then be able to decide on any remedial action necessary to be included in forthcoming plans.

EXERCISE. *Circulation of examples of existing medium and short term plans. Organisation of participants into small groups to prepare medium term plans for their own country, and/or items to be included into such a plan.*



STANDARDS PREPARATION - 1

National Information Standards Committee

Sub Committees called EXPERT COMMITTEES

Rapporteur — Chairman — Members

writes draft standard

may prepare int. standard

9-9

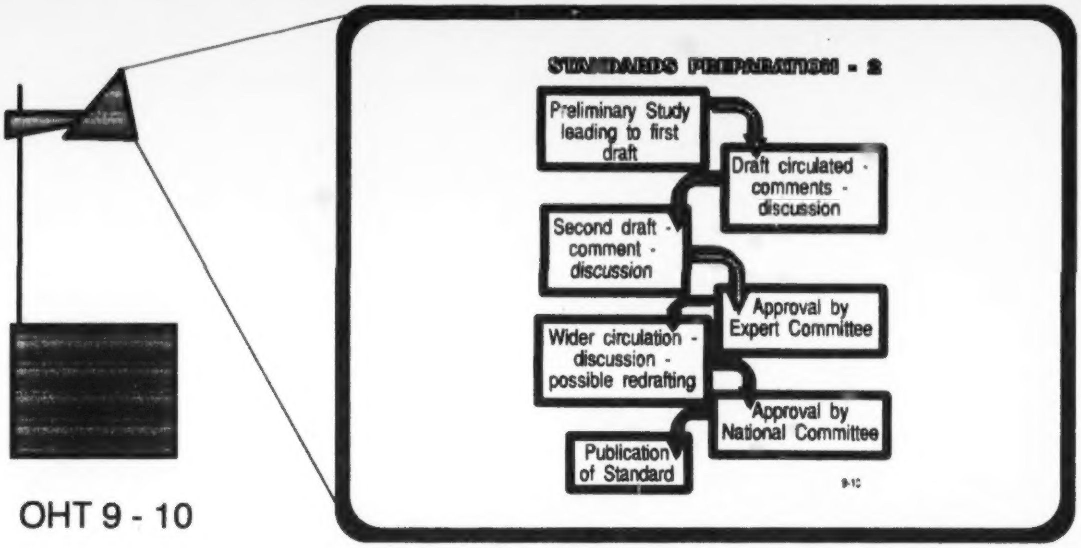
OHT 9 - 9

Standards should be prepared and revised by EXPERT COMMITTEES. These are sub-committees of the National Information Standards Committee. In certain circumstances it may be necessary for these sub-committees to have their own sub-committees or working groups.

Expert Committees would have a Chairman and a Rapporteur. The Rapporteur would normally be the author of the draft standard.

Members of these committees would be experts experienced in the subject field. They would be selected from and represent those organisations with most experience in the area. They may be members of the National Information Standards Council or be invited on work only on the preparation of a particular standard.

To ensure continuity, the experts who are involved in the preparation of national standards should also take part in the preparation of international standards.



OHT 9 - 10

STANDARDS PREPARATION - 2

Preliminary Study leading to first draft

Draft circulated - comments - discussion

Second draft - comment - discussion

Approval by Expert Committee

Wider circulation - discussion - possible redrafting

Approval by National Committee

Publication of Standard

9-10

The phases in the preparation of national standards may vary from one country to another, but tend to follow a similar pattern. *(**SEE ALSO** Module 1, OHT 1-12, 1-13)*

The Expert Committee, or a working group appointed by it, will commence with a preliminary study of the subject. This includes a study of any appropriate background documents such as the international standard, or where one does not exist, the standards of other countries. This will ensure future compatibility and save time and effort in that it will not be necessary to 'invent' already existing rules. A first draft of the proposed standard is then prepared.

529

OHT 9-10 continued on back

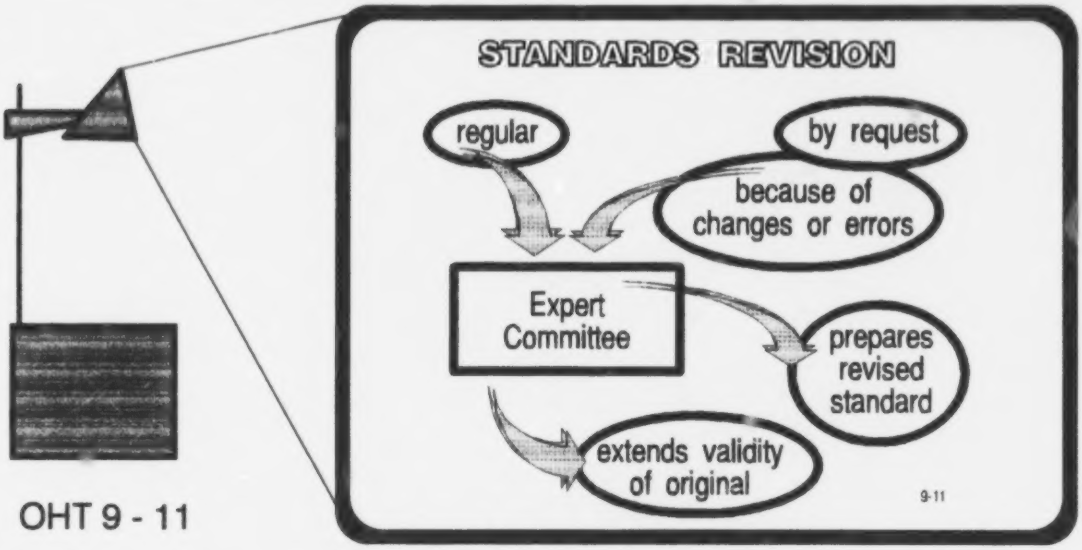
OHT 9-9 continued

The draft is circulated amongst the members of the Expert Committee for comments. These are then discussed at a meeting of the Committee. This may lead to the preparation of a second, and if necessary, subsequent drafts for circulation, comment and discussion.

When agreement is reached, the Expert Committee will approve the draft standard.

The approved draft is then circulated more widely and further discussions leading to further redraftings may take place.

Once approval is reached, the final draft may be adopted as a National Standard in several ways, depending upon the country concerned. It may be voted on by all the potential users of the standard through their organisations. Or it may be voted on by all the bodies represented on the National Information Standards Committee. Or it may be approved by the decision of the Head of the National Standards Body, based on the proposals of the expert committee and the results of discussions with all interested bodies.



OHT 9 - 11

STANDARDS REVISION

regular

by request

because of changes or errors

Expert Committee

prepares revised standard

extends validity of original

9-11

Existing standards should be reviewed by Expert Committees regularly as agreed by the national standards body - normally every five years. But if the standards body is requested to do so, a particular standard can be reviewed at any other time. This would normally be because of significant technological or international developments or mistakes in the existing standard.

After the standard is reviewed a variety of decisions can be reached. The validity of the original standard can be extended either as it stands or with minor changes as a new edition. Or it may be decided that a revised standard should be prepared.

The revision procedure should be similar to that of the preparation of a new standard, except that it is likely that there will be written comments about the existing standard and reasons for its revision.

OHT 9-11 continued on back...

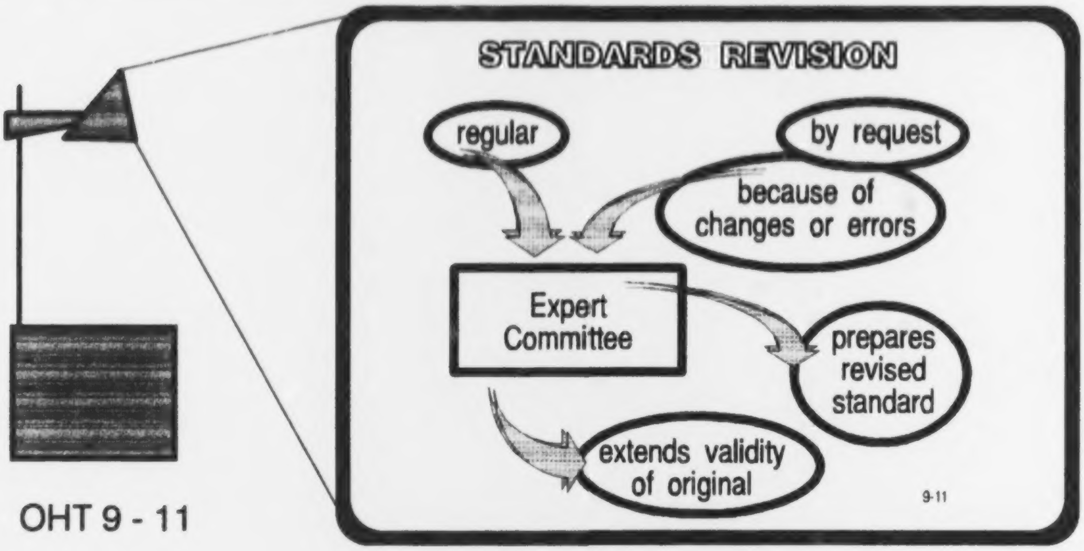
OHT 9-11 continued.

EXERCISE. Examination of a draft standard.

Instruction should be given on:-

1. *how to make appropriate comments on drafts.*
2. *how to conduct a meeting at which a draft and the comments made about it are discussed with the aim of improving and rewriting the previous version. Participants should be made aware of the distinction between essential and editorial comment, and the 'skeleton-type' text of standards. They should be shown how to avoid argumentation and explanations, except for notes making the text understandable and unambiguous.*

Participants should then be divided into small groups to rewrite a draft standard which has been commented on.



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OHT 9-11 continued on back...

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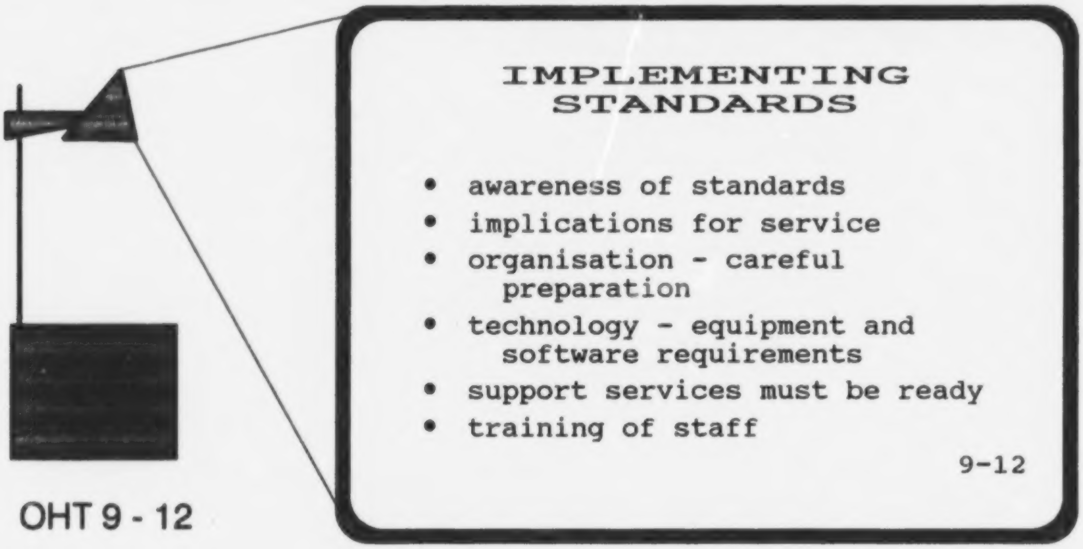


OHT 9 - 12

IMPLEMENTING STANDARDS

- awareness of standards
- implications for service
- organisation - careful preparation
- technology - equipment and software requirements
- support services must be ready
- training of staff

9-12

Applying standardisation does not depend solely on the availability of an appropriate standard or on a decision to use it. Other conditions will also determine when it can be used.

Firstly, an awareness of the existence of a relevant standard is required. Potential users must be informed of its existence and its implications for information services, so that appropriate decisions can be taken. Good publicity can be obtained through the widest possible participation in the preparation of the standard and through the professional journals.

The second of these conditions is organisational. There is often a considerable amount of careful preparation to be done before a standard can be applied. For example dealing with backfiles of older material which were not dealt with according to the new standard, re-cataloguing etc.

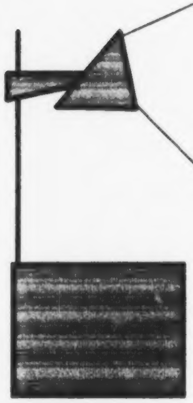
OHT 9-12 continued on back...

OHT 9-12 continued.

Thirdly, technological conditions may influence when standardisation can be applied. New equipment may be necessary before standardisation can take place - new computer peripherals, or replacing or adapting non-standard older machinery. As a simple example, changes in bibliographic description could influence the size of catalogue cards used and therefore also the size of catalogue drawers!

Fourthly, other institutions may be involved in the standardisation process, and it may take them time to change their procedures. For example the national library, agencies for ISBN and ISSN and so on.

And fifthly, it will take time to train staff on the application of standards. Setting up regular and special training courses can be both time-consuming and expensive, but essential if successful standardisation is to be achieved.



OHT 9 - 13

Implementing Standards -

Surveying Use

CHECK take-up after publication

CHECK application regularly & before revision

METHODS:-

- surveys, interviews
- questionnaires, analysis of services & publications, meetings etc

RESULTS:-

- aid planning
- aid revision
- improve publicity

9-13

After a standard has been published for a reasonable time, a survey needs to be conducted to show the degree of take up. Then its application and practicality needs to be checked regularly during the period the standard is valid. Finally, its users should be surveyed again before the standard comes up for planned revision.

The degree of take up and the value of a standard can be revealed by special surveys, interviews and questionnaires. Occasional or regular analysis of publications and services can also be undertaken. Meetings and discussions on the application of standards can be held.

OHT 9-13 continued on back...

OHT 9-13 continued

The results of such surveys can be invaluable when planning for standardisation, for the revision of standards and for the improvement of publicity about standards.

Remove OHT 9-13

Switch off projector unless the Instructor has additional materials to be shown.

OBJECTIVE 4. TO SHOW THE PREPARATION OF STANDARD-LIKE DOCUMENTS.

Finally, a brief comment about the preparation of STANDARD-LIKE DOCUMENTS.

Standard-like documents have less binding force and are used by a smaller community within the country.

However, the aims and principles of their preparation are identical with those of national standards. Therefore the phases in the preparation of standard-like documents by the various standardising bodies should be identical with those in the preparation of national standards.

However, it is of less importance, especially in the case of in-house standards, to achieve a formal consensus of all users.

EXERCISE. *Participants should be asked to report on and constructively criticise their national and organisational standardisation policies and practices.*

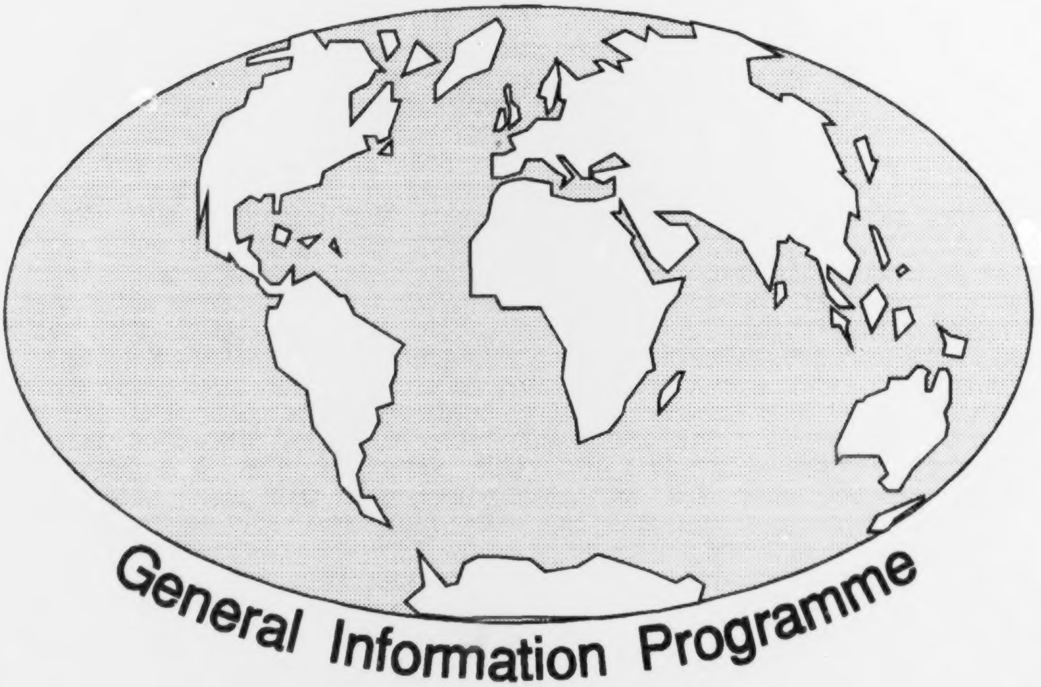
PGI-91/WS/2
Paris: Unesco, 1991

Teaching Package
on
Standardisation in Information Handling

Module 9

Overhead transparency master copies

Photocopy onto plastic sheets approved by the Photocopier Manufacturer ONLY. Copies should be the same size as the originals, with at least a one centimetre margin all round.



NATIONAL STANDARDISATION IN INFORMATION HANDLING

OUTLINE

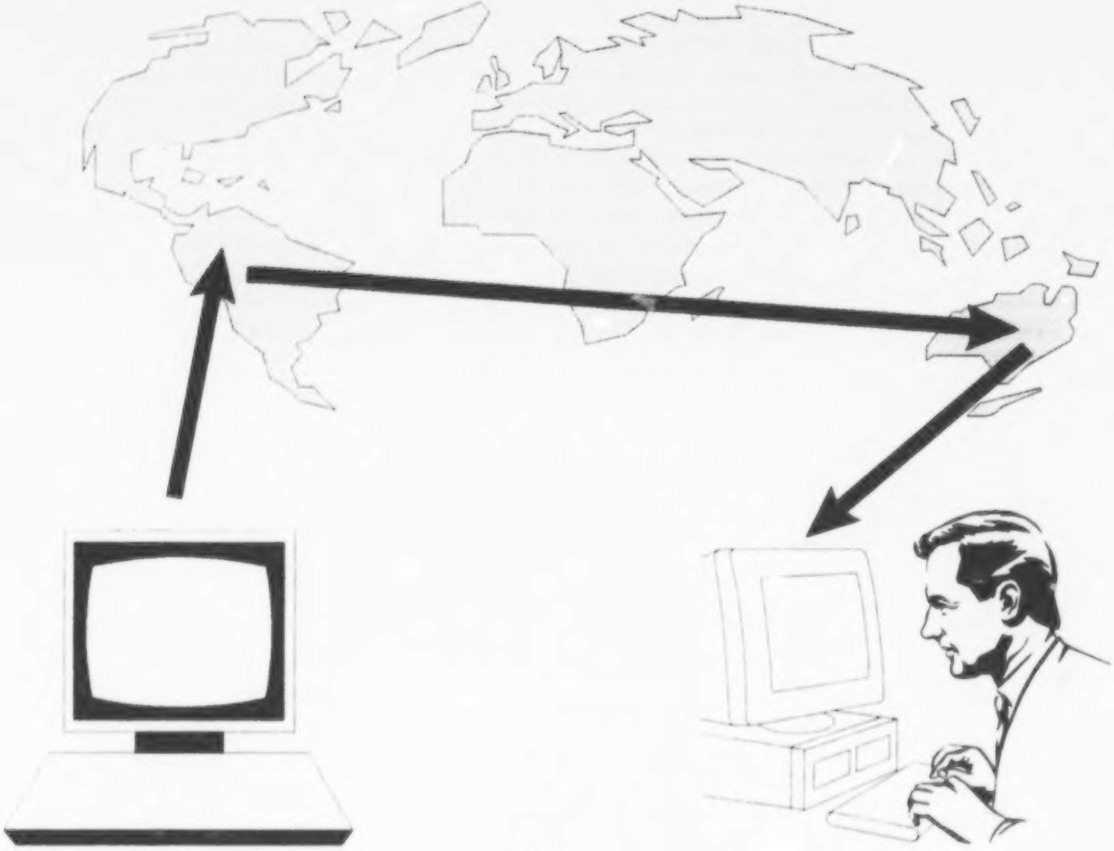
Relation of nat. standards to 'higher' and 'lower' levels

Bodies involved in nat. standardisation

Organisational framework

Planning, preparation and promotion of standards

WHY INTERNATIONAL STANDARDISATION IN INFORMATION ?



ROLES & LEVELS OF STANDARDS

INTERNATIONAL STANDARDS

- ○ Overall, international rules

NATIONAL STANDARDS

- ○ International rules adapted to meet national needs,

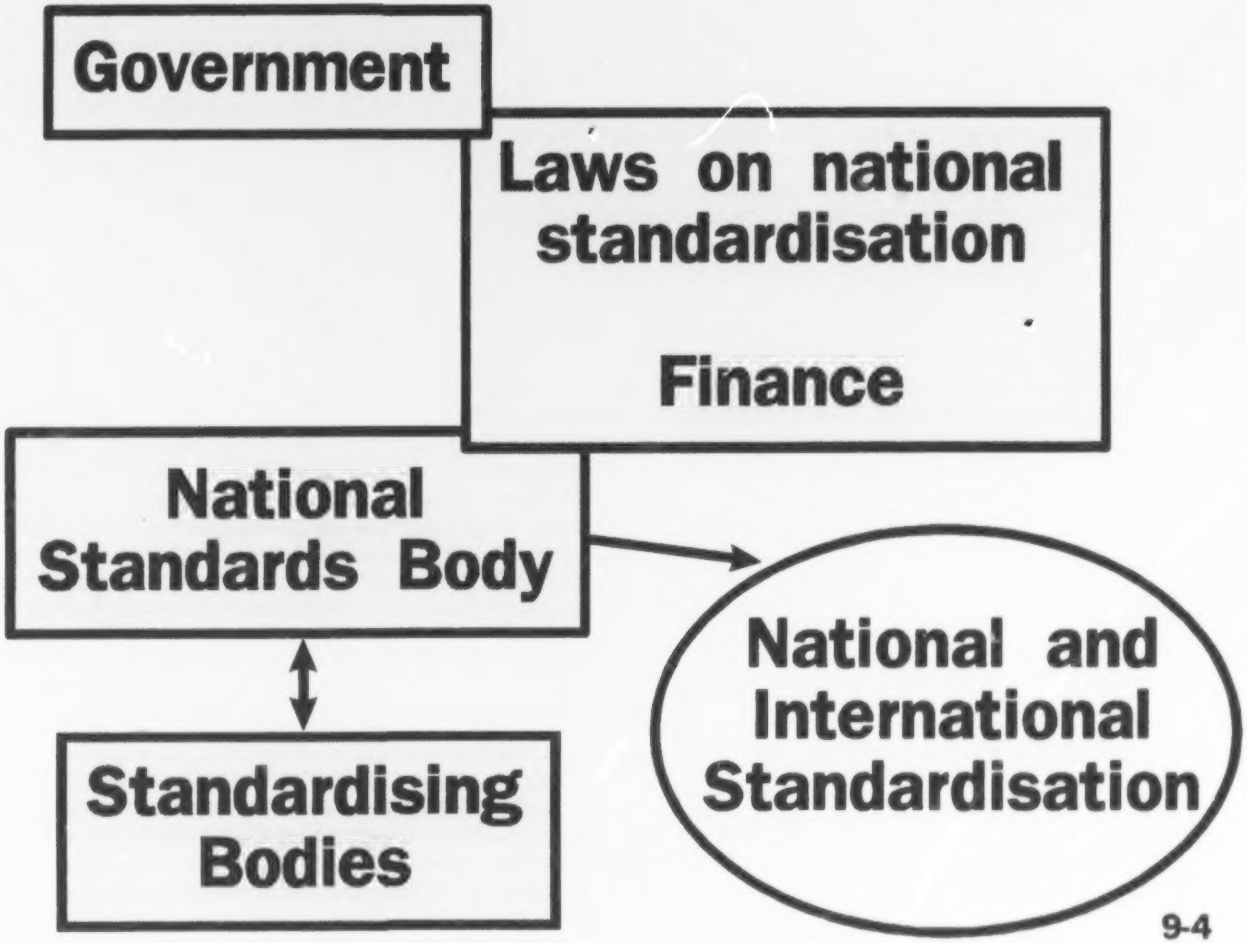
  or

- ○ General national rules

REGIONAL / INHOUSE STANDARDS

- ○ National rules adapted to meet local needs
- ○ Local detail and practices

LEGAL AND FINANCIAL FRAMEWORK



Government

Laws on national standardisation

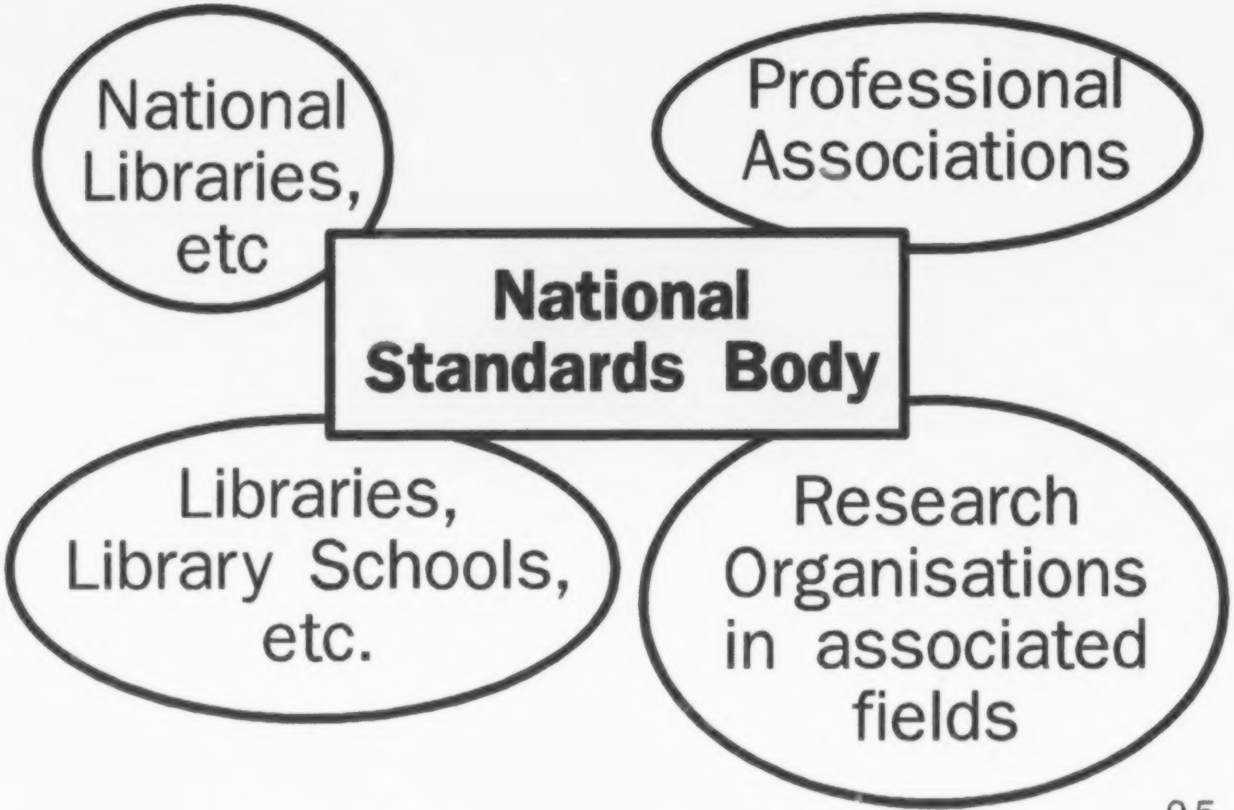
Finance

National Standards Body

Standardising Bodies

National and International Standardisation

BODIES INVOLVED IN NATIONAL STANDARDISATION



National Libraries, etc

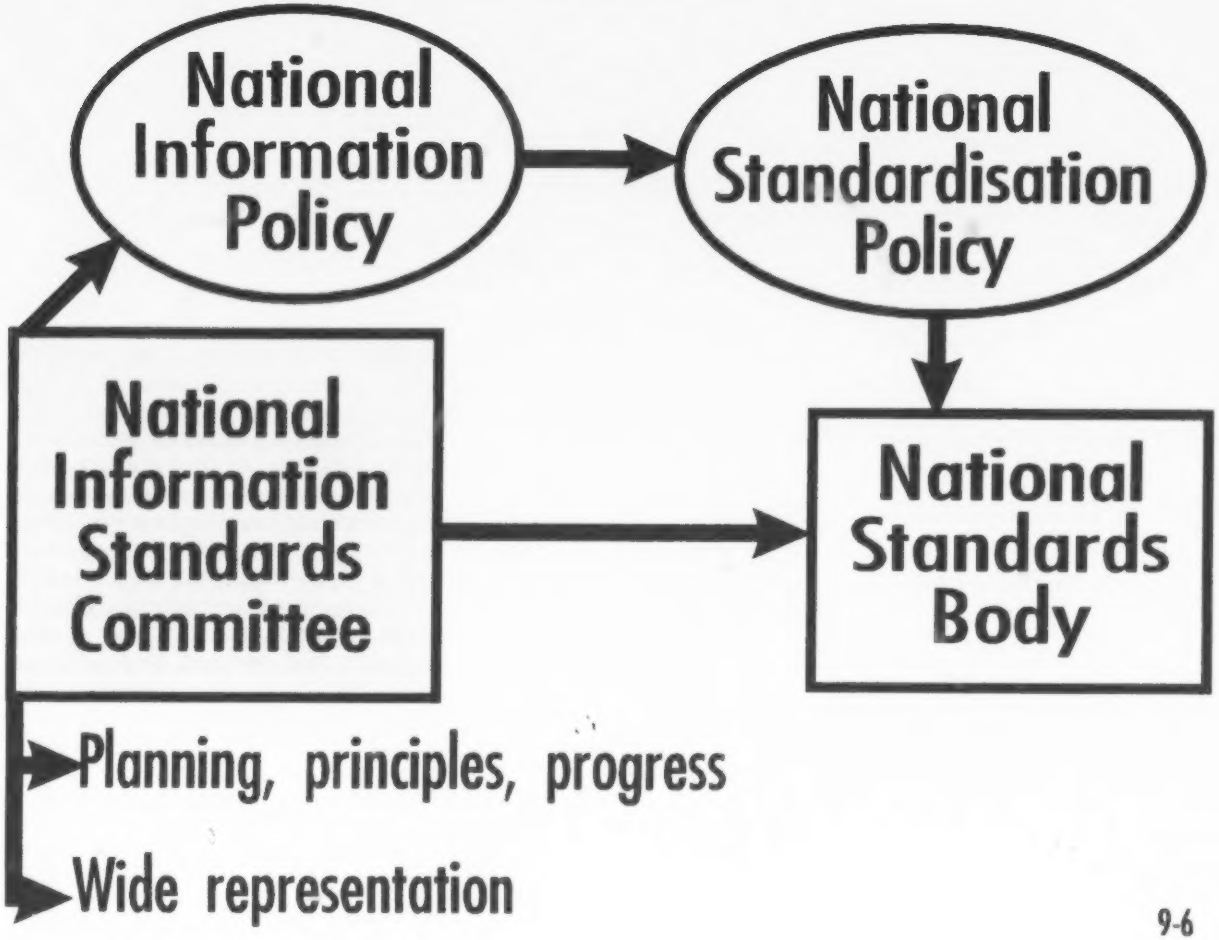
Professional Associations

National Standards Body

Libraries, Library Schools, etc.

Research Organisations in associated fields

PLANNING FOR STANDARDS



National Information Policy

National Standardisation Policy

National Information Standards Committee

National Standards Body

- Planning, principles, progress
- Wide representation

NATIONAL INFORMATION STANDARDS COMMITTEE - POLICY AND PLANNING

- standardisation policy
  - long term plan

- medium term plan
  - programme for 4/6 yrs

- short term plan
  - one years operations

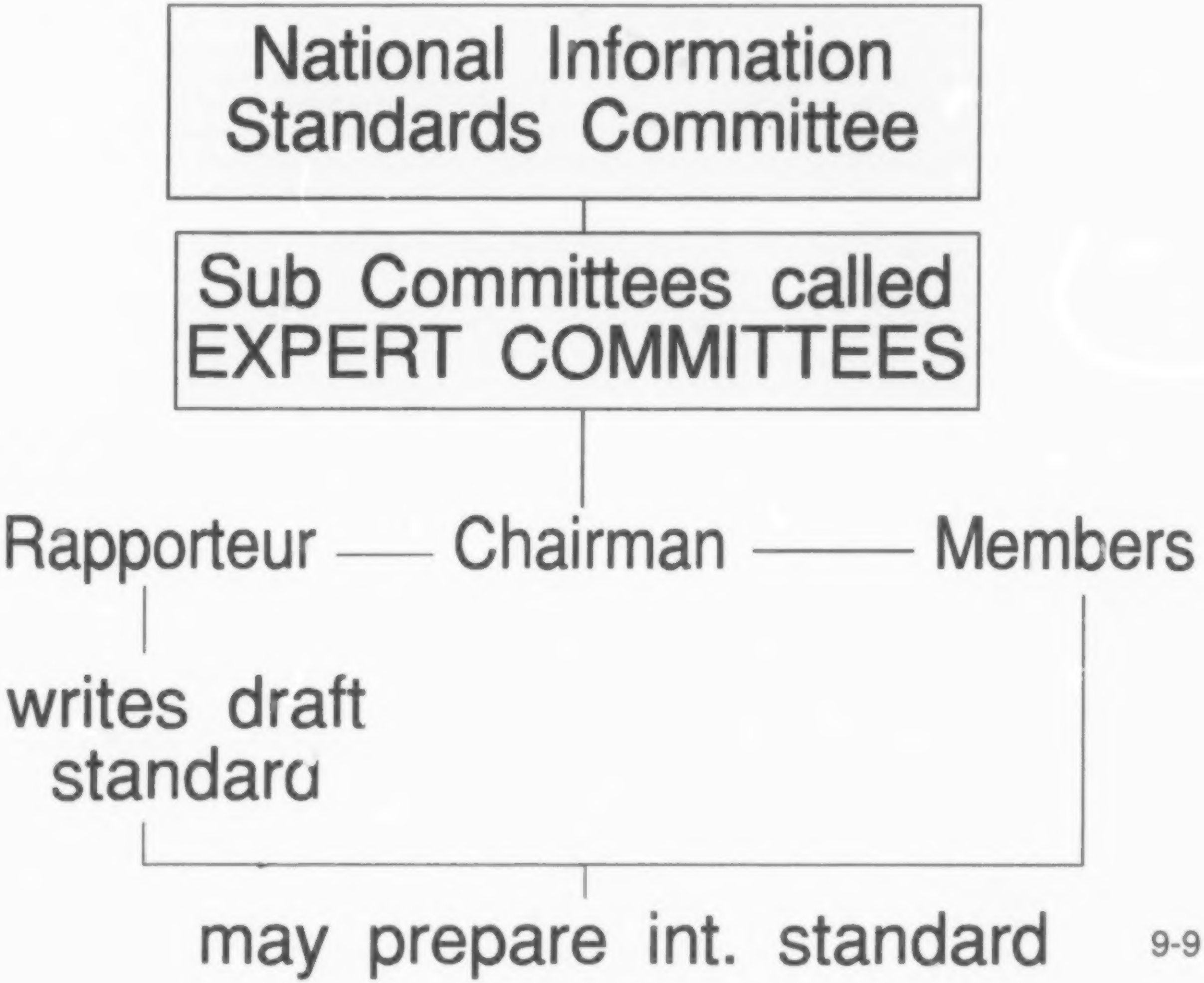
NATIONAL INFORMATION STANDARDS COMMITTEE

MEDIUM AND SHORT TERM PLANS

Preparation of draft plan
- publicity, discussion and amendment
- approval by National Committee
- publicity

Guide-line for short term planning
- short term plan

STANDARDS PREPARATION - 1



National Information Standards Committee

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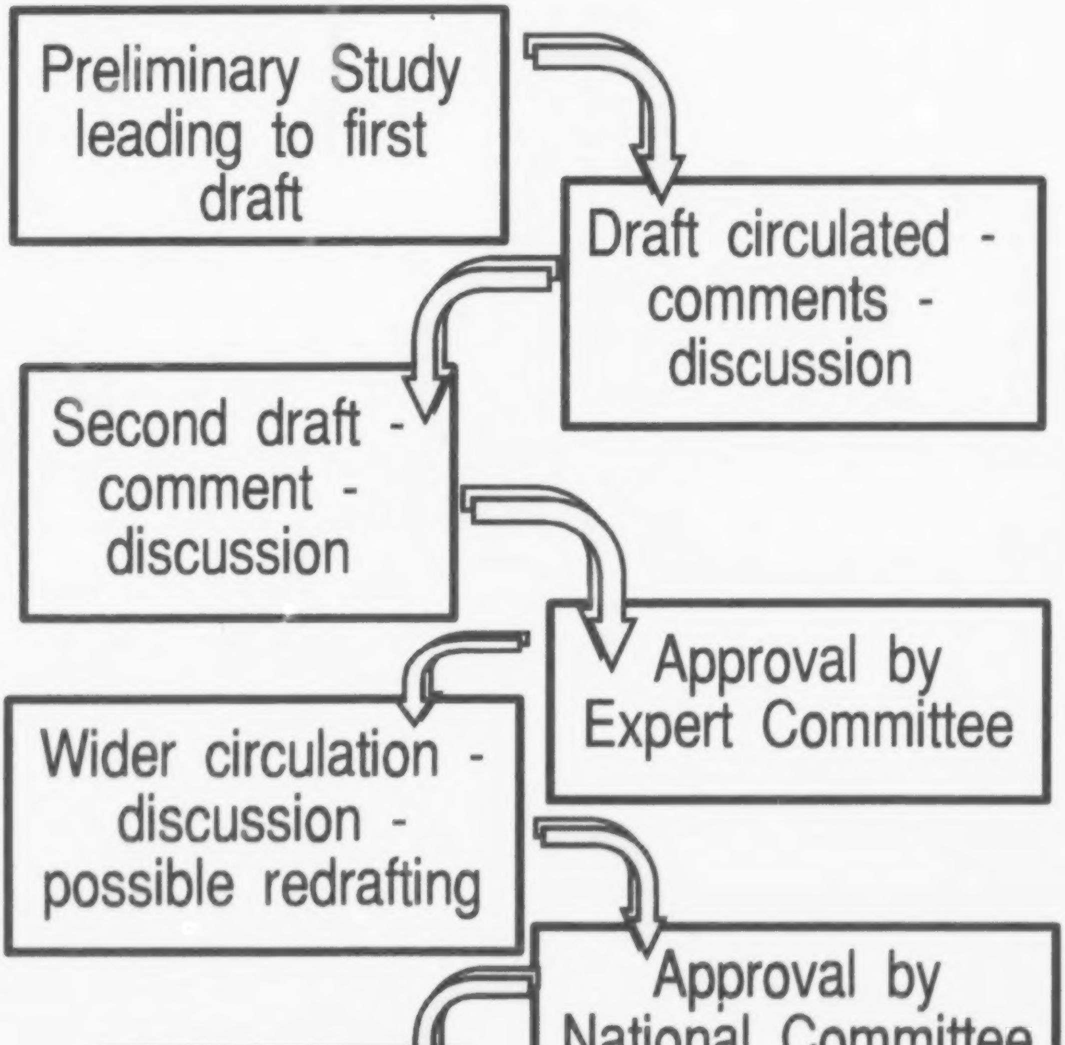
STANDARDS PREPARATION - 2



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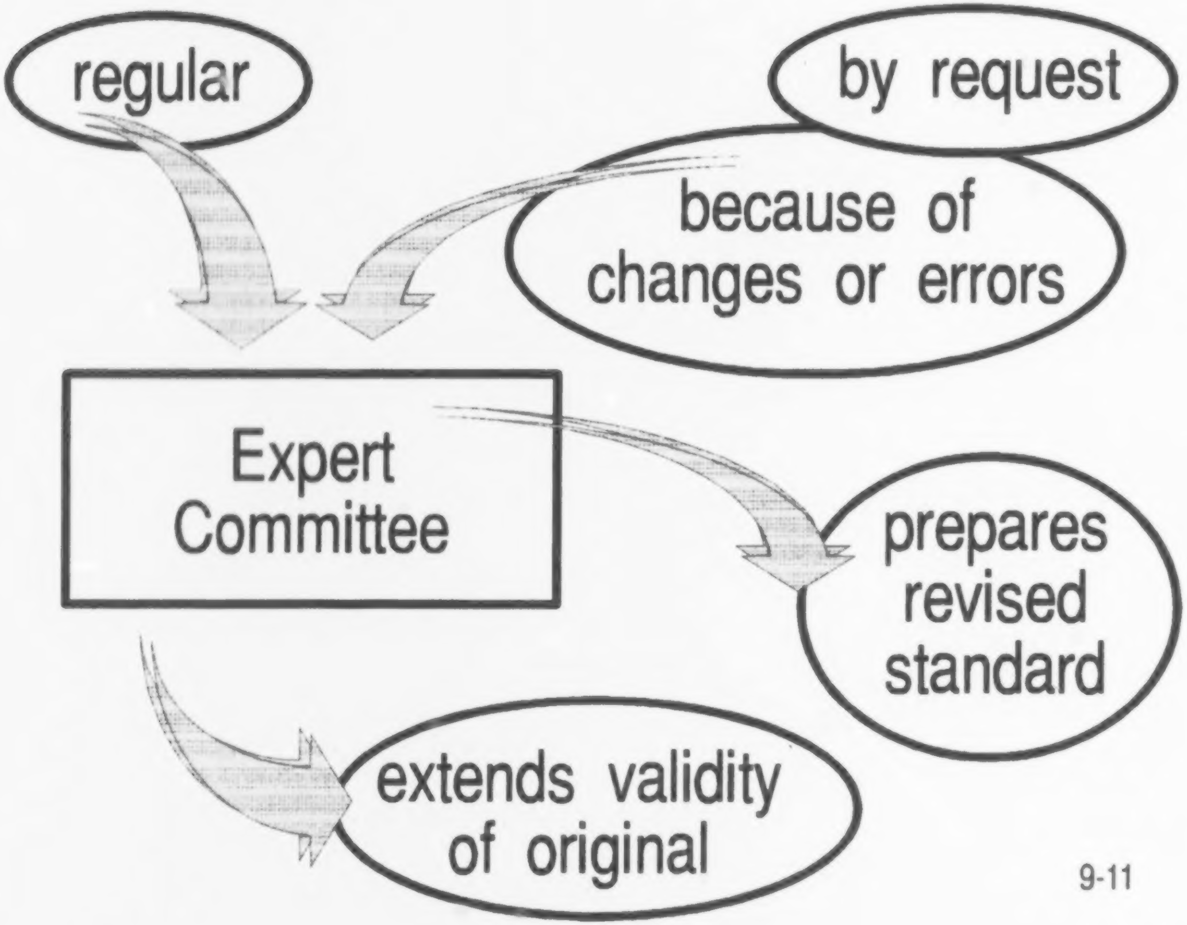
Approval by National Committee

Publication of Standard

9-10

STANDARDS REVISION



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prepares revised standard

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IMPLEMENTING STANDARDS - 1

- Awareness of standards
- Implications for service
- Organisation - careful preparation
- Technology - equipment and software requirments
- Support services - ready
- Staff - training

IMPLEMENTING STANDARDS - 2

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Check application regularly & before revision

Methods:-

Surveys, interviews, questionnaires, analysis of services and publications, meetings, etc.

Results:-

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- aid revision
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